

# Progressive Architecture

March 1976 An  Reinhold Publication

Housing: high-rise vs. low-rise



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March 1976

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## Housing: High-rise vs. low-rise

39 **Editorial: Housing choices**

40 **Upstairs, downstairs**

The transition from house to housing began in the urban row house. Examples of present day low-rise, high-density housing are introduced.

42 **Greener pastures**

The Town Center Housing of Runcorn, England began in 1968 with James Stirling & Partners' design of 1500 units for 6000 people.

48 **Urban suburban**

Louis Sauer Associates' Penn's Landing Square in Philadelphia's Society Hill, though formidable to outsiders, appeals to its residents.

52 **Picking up the pieces**

Renovating tenements in the Bronx is proving to be a viable alternative to slum clearance. Architects are Beyer, Blinder, Belle.

54 **Low-rise lemon**

Perkins & Will's West Village Houses in New York, the victim of multiple vicissitudes since their inception, are a financial fiasco.

58 **Unheavenly cities?**

High-rise housing's future seems to depend on whether or not it can satisfy livability criteria within its economic constraints.

60 **The last gasp: New York City**

Case histories of three high-rise housing projects located in New York City: Manhattan Plaza, Taino Towers, and Confucious Plaza.

64 **High-rise in Harlem**

1199 Plaza by Hodne/Stageberg successfully combines livability and architectural form in moderate and middle income cooperative housing.

70 **Brooklyn's Blakeslee**

Rutland Road Houses by Stull Associates is systems housing that implies endless repetition but disproves generalities.

## Technics:

78 **Specifications clinic: A bellwether**

80 **Stonewalling it**

The history of stone in architecture reaches into antiquity, but today's technology suggests a re-examination of its potential.

## Departments

6	Views	98	Building materials
21	News report	100	Job mart
34	In progress	104	Directory of advertisers
90	Products and literature	105	Reader service card

**Cover:** Montage of three housing developments beginning with Runcorn Town Center Housing at the bottom (p.42); 1199 Plaza in the middle (p.64); and Rutland Road Houses at the top (p.70).

P



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(a)

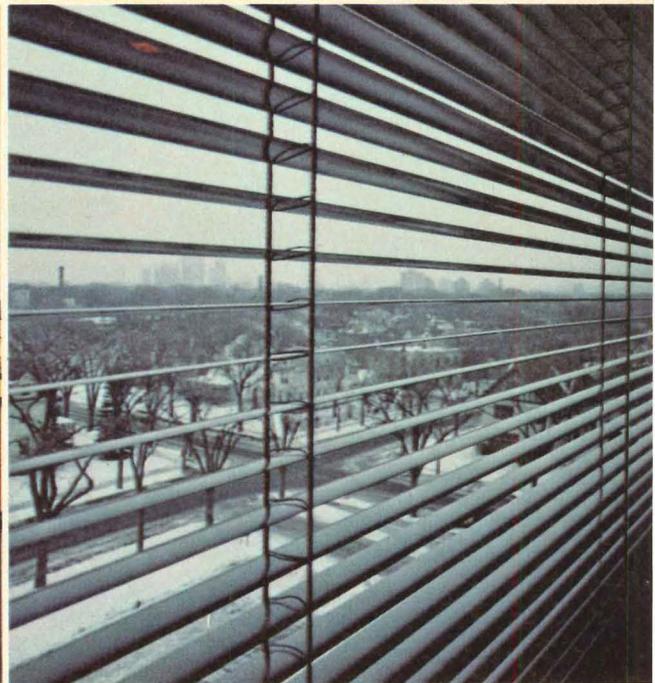
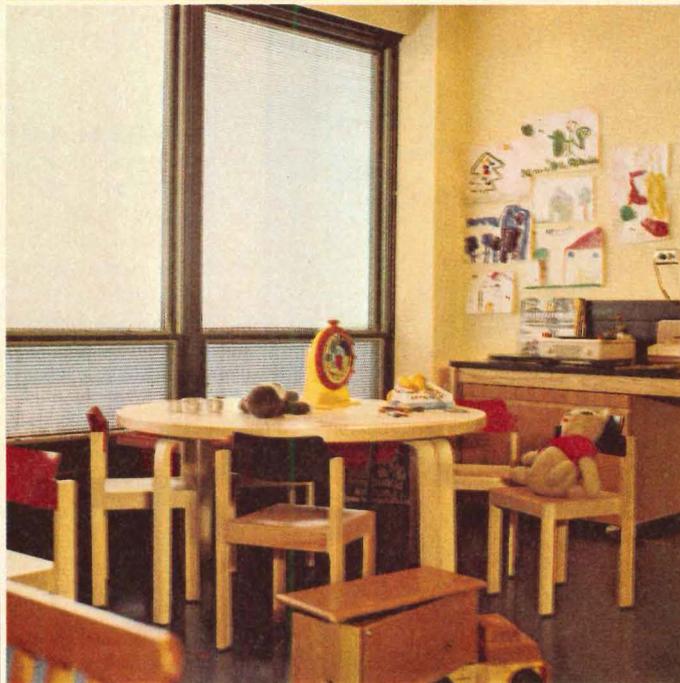
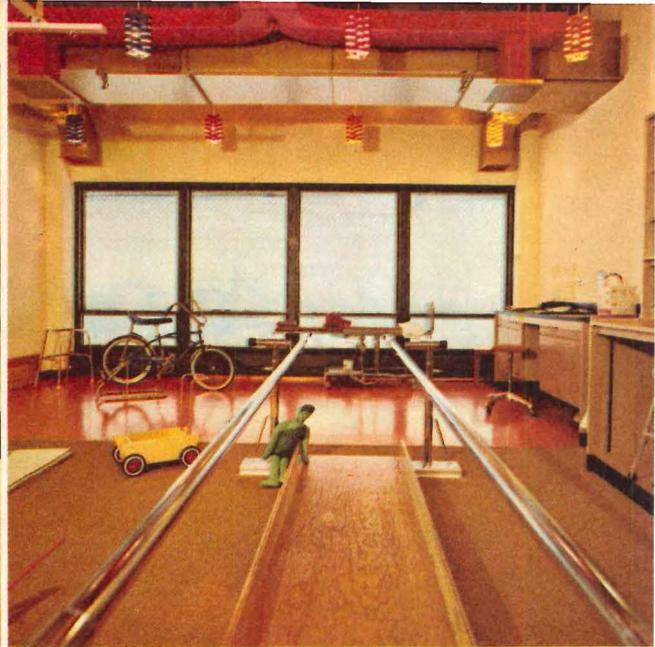
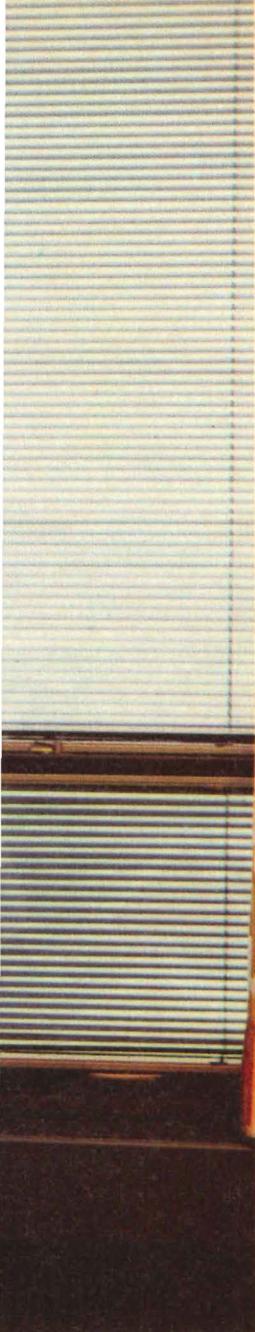
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(b)

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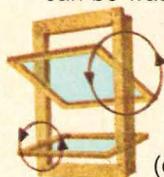
removable inside storm panel in our Double Glazing em gives you any number of interesting options. Like using Slimshade® (c) to control sunlight, privacy and solar heat and loss. Housed between the panes, this fully adjustable remains virtually dust-free. The Double Glazing System can also accommodate our snap-in wood muntins or privacy panels. But flexibility is not the system's only built-in advantage. The 13/16" air space between the panes also does a better job of insulating than welded insulating glass.



(c)

Afterward, the ease of washing a counterbalanced, pivoting sash double-hung window.

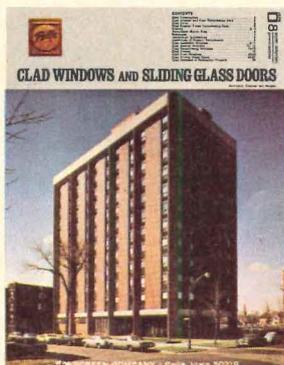
Window cleaning is another maintenance factor that must be considered. And here again, Pella design makes an easy job of it. Our Double-Hung Window has a spring-loaded, vinyl jamb liner which allows the sash to pivot. So the outside surfaces can be washed from inside the building. And because each sash pivots at its center point (d), the weight of the sash is counterbalanced. Which makes the whole job just that much easier. Reglazing can also be accomplished from inside, along with sash removal.



(d)



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## Letters from readers

# Views

### P/A Awards: reader judgments

Your selection makes me embarrassed to call myself an architect. There was not a single example of architecture in the whole group, with the exception of the Art Center College. And then I would suggest the burned ashes of the citation be scattered over Mies's grave.

The selection of garbage as examples of fine design makes the intellect of your jurors questionable to say the least.

*Sam Carson, Architect  
Charles Kober Associates  
Los Angeles, Calif.*

(The selections were made by the jury, not by P/A's editors, and their substantial accomplishment and recognition in the profession testify more than adequately to their intellectual strength—Editors)

Congratulations to P/A for having the intestinal fortitude to publish the unexpurgated text and illustrations of the Design Awards Jury. The forthright, hard-hitting commentary combined with explicit photographs showing each entry from every conceivable position is powerfully expressive of P/A's bold editorial policy.

The only items lacking were full-color glossy fold-outs suitable for framing. It was also disappointing that your composition and layout people failed to place small black stripes over the eyes of each individual juror to afford them the anonymity they so richly deserve.

I look forward to the day when P/A is syndicated and appears in the Sunday papers next to the funnies, where it has always belonged.

*Roy Lowey-Ball, Architect  
San Antonio, Tex.*

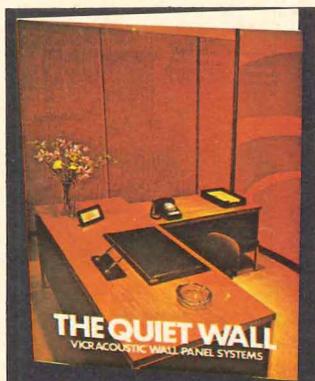
It was with a great sense of excitement and good feeling that I read the January Awards issue of P/A. I say this for several reasons. First, having been a juror myself, I know how difficult it is not only to find good work but also for a jury to agree on what it is which is good. Second and perhaps more importantly, to have such a strong, talented, and diverse group of tough-minded professionals from the distant geographic and spiritual areas of the country give (continued on page 8)

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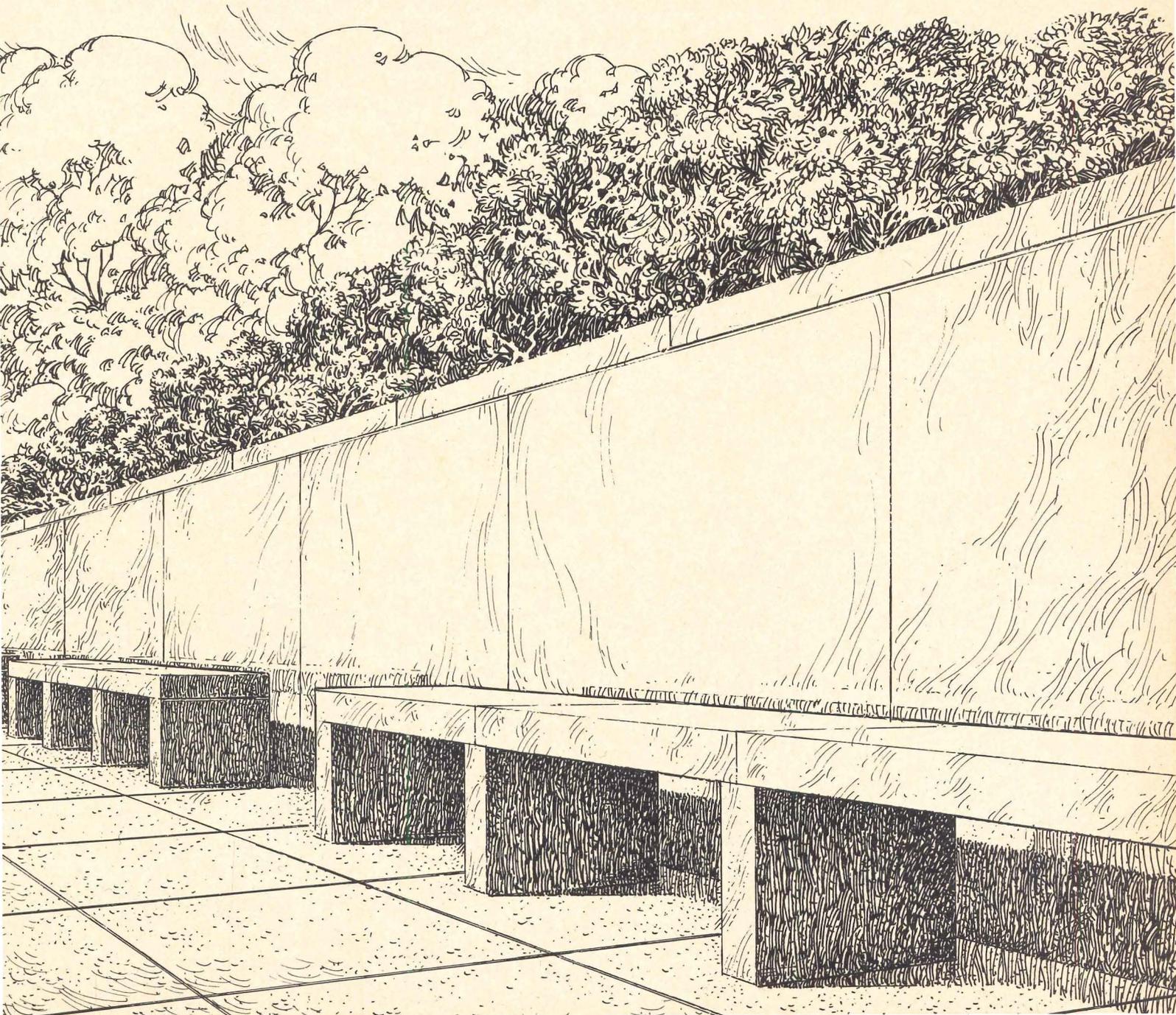
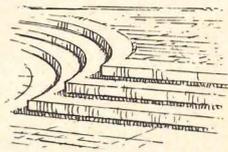
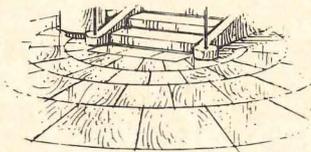
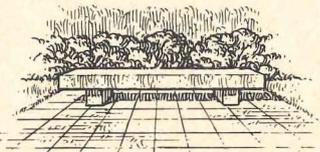
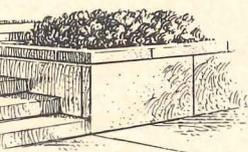
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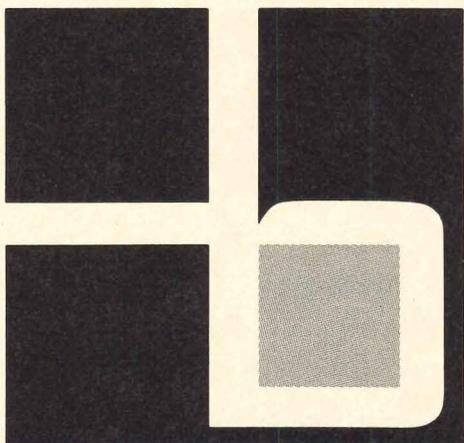


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**Views** continued from page 6

awards to such projects as the Ambasz Museum and the Machado-Silvetti House means that there *is* something electric in the air.

It means that there are clients who are willing to experiment with new ideas and gamble with young, unknown architects. It means that there are young architects all over this country budding with energy, talent, and a spirit about architecture. It means that architecture and a spirit of *modernism* still live and are important to professionals, to clients, and to the young generation of architects. What a far cry from the negativism of 1968!

If P/A continues to stand, only this once every 12 months, against the philistinism of *laissez-faire* mediocrity by bringing in an uncowed group of true professionals to prelate design excellence, then it will serve us *all* well; and that good feeling will continue.

*Peter D. Eisenman, Director  
Institute for Architecture and Urban Studies  
New York, N.Y.*

I would like to raise some strong objections to the presentation of P/A awards shown in your January 1976 issue. My objections relate to the professional level of the presentation, and although I have strong feelings about the designs shown, I will not touch on that matter. (I'm sure some of my colleagues will have much to say about the designs.)

I would rate the graphic presentations (as printed, not necessarily as originally submitted) as somewhere between poor and inadequate. Most entries are condensed to the point where it is difficult to completely understand the design. For example, it would have been nice to see a site plan for the Willows Child Learning Center and the Art Center College of Design or a floor plan for the Southside Settlement.

1 The Fountain House presentation left me with many questions. Pelli says "the drawings are gorgeous." Perhaps they are—but are they clear? I'm sure it was inadvertent that the spaces, so carefully numbered on the plans, were not then referenced to a table. As presented, I'm left with a few questions:

- a. What is the site like?
- b. How do you approach the house?
- c. Where is the front door?
- d. What are the boundaries of what I presume is the living area on the first floor? What's inside and what's outside?
- e. What are those unnumbered spaces behind the bedroom(s) on the fourth floor? (or is that supposed to be the third floor?)

2 The granting of an Award to the Grand Rapids, Mich., community arts center left me with only a feeling of wonder. The drawings, as shown, seem to be a representation of a fantasy:

- a. Is the approach to the Grand Foyer a stairway 15 + ft high with no landings and no railings?
- b. How does the water in the waterfall stay off the steps and not run off the edges?
- c. Where does the water go when it gets to the bottom?
- d. What prevents someone from walking up onto the roof?
- e. What is the connection between the inclined

plane and the existing walls and windows on the sides?

Yes, I know all these questions can be answered. I suspect that the answers might have some very significant bearing on the looks of the project.

3 Some questions about the Citation to the Art Center College of Design:

a. On page 7 of the January 1976 issue, the two governing rules are defined, including the statement that "the work submitted must not yet be executed." I received my issue of P/A on January 19. The *Los Angeles Times* for the same day (Part IV, page one) published a story about the dedication of the Art Center along with a picture of the completed structure. Is it carping to expect a little checking to ascertain the facts?

b. The commentary on the projects says "... the building, at \$30 per sq ft, is within its budget." Custom wood frame residences are being built in Southern California at the present time for between \$25 and \$35/sq ft and up. I am surprised that a building with "exposed steel truss(es) with opaque gray insulated panels and matching glass set into the frame" can be built at the quoted price. At the least, I would have appreciated a professional statement indicating what the square foot cost did and did not include.

Perhaps, more than you intended, this issue represents the current state of the art.

*Matthew Goodwin, AIA  
Goodwin / Ruderman / Kilbane  
Los Angeles, Calif.*

(To answer Mr. Goodwin's questions concisely:

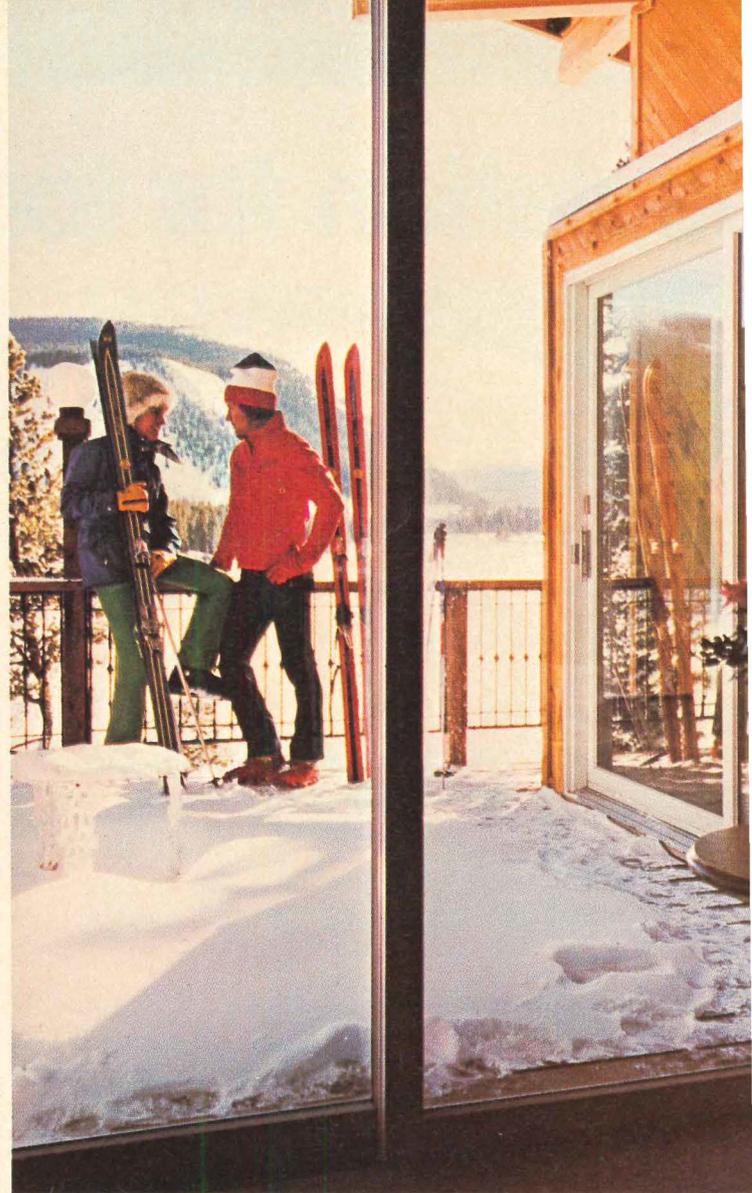
- 1 a. site slopes gently down toward house; b. roadway approaches stair on north side of house, which is shown on published drawings; c. entry is at foot of entrance stair, as plans show; d and e. P/A apologizes for inadvertent deletion of legends for plans and transposition of 3rd and 4th floor plans, but drawings nevertheless make clear the location of fixed functions, and any doubt about indoor/outdoor can be cleared up by reference to model photos.
2. a. main stair will have handrails, but no intermediate landings are required; b. the concave plan of the waterfall portions keeps the water in; c. there is a drain grille at the bottom; d. one can climb to the roof by jumping the handrail and getting one's feet wet; e. there will be flexible connections between the inclined plane and the existing façades.

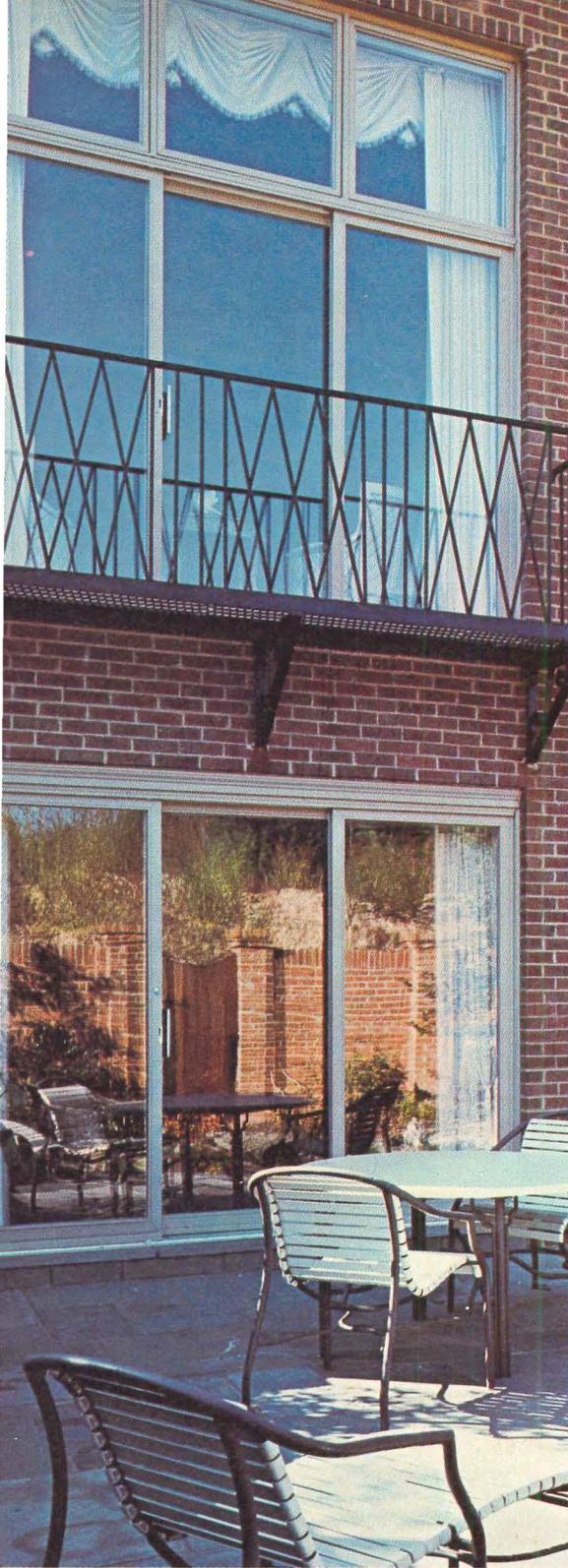
3 a. the entry form specifies that projects are "not yet completed." This building was not completed at the time of submittal (Aug. 31) and was not quite completed in February, although a dedication was held in late January. b. the \$30 per sq ft figure is accurate and includes all construction except for completion of the auditorium, site work, furnishings, and professional fees; the architects attribute the economy to repetition of standard details, exposed concrete floors and elimination of suspended ceilings in most portions, a favorable price on steel, and donation of a few items, including drinking fountains.—Editor)

#### **Correction**

The correct price of *A Greene and Greene Guide*, published by the author, Janann Strand, which was reviewed on p. 107 of P/A, Jan 1975 is \$8, not \$15; there are 112 pp., not 128.







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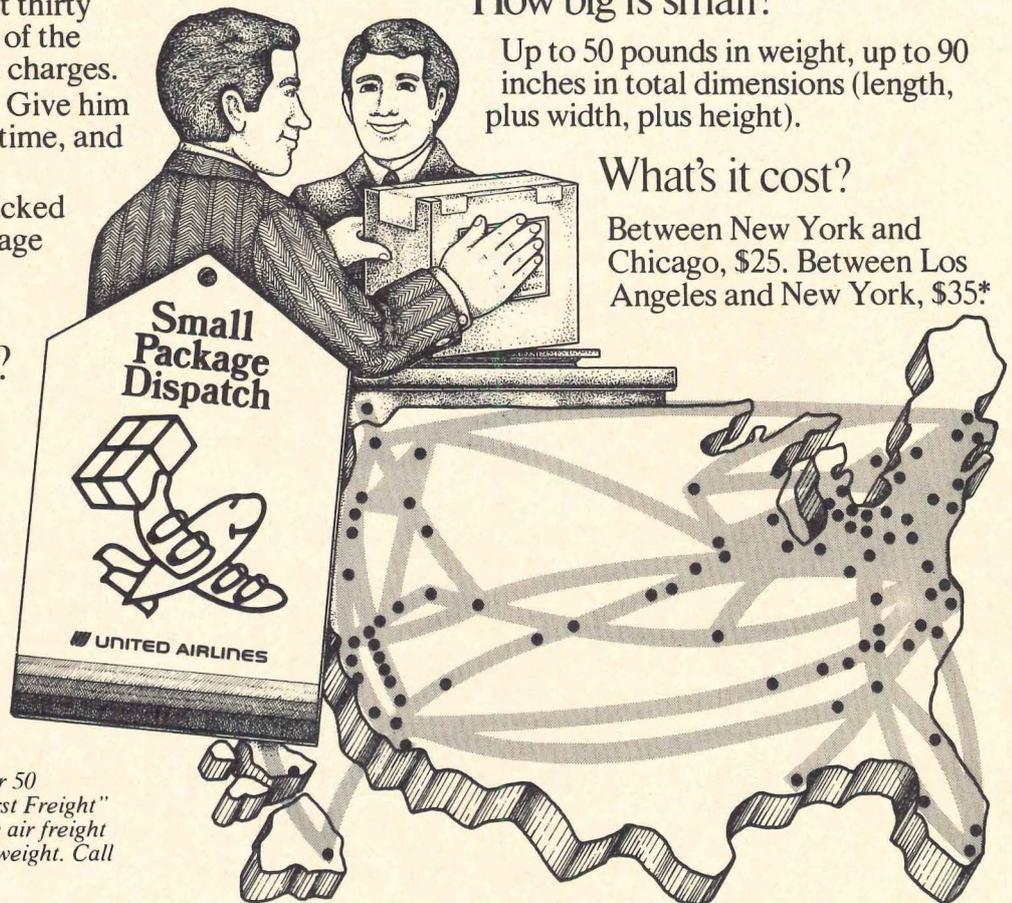
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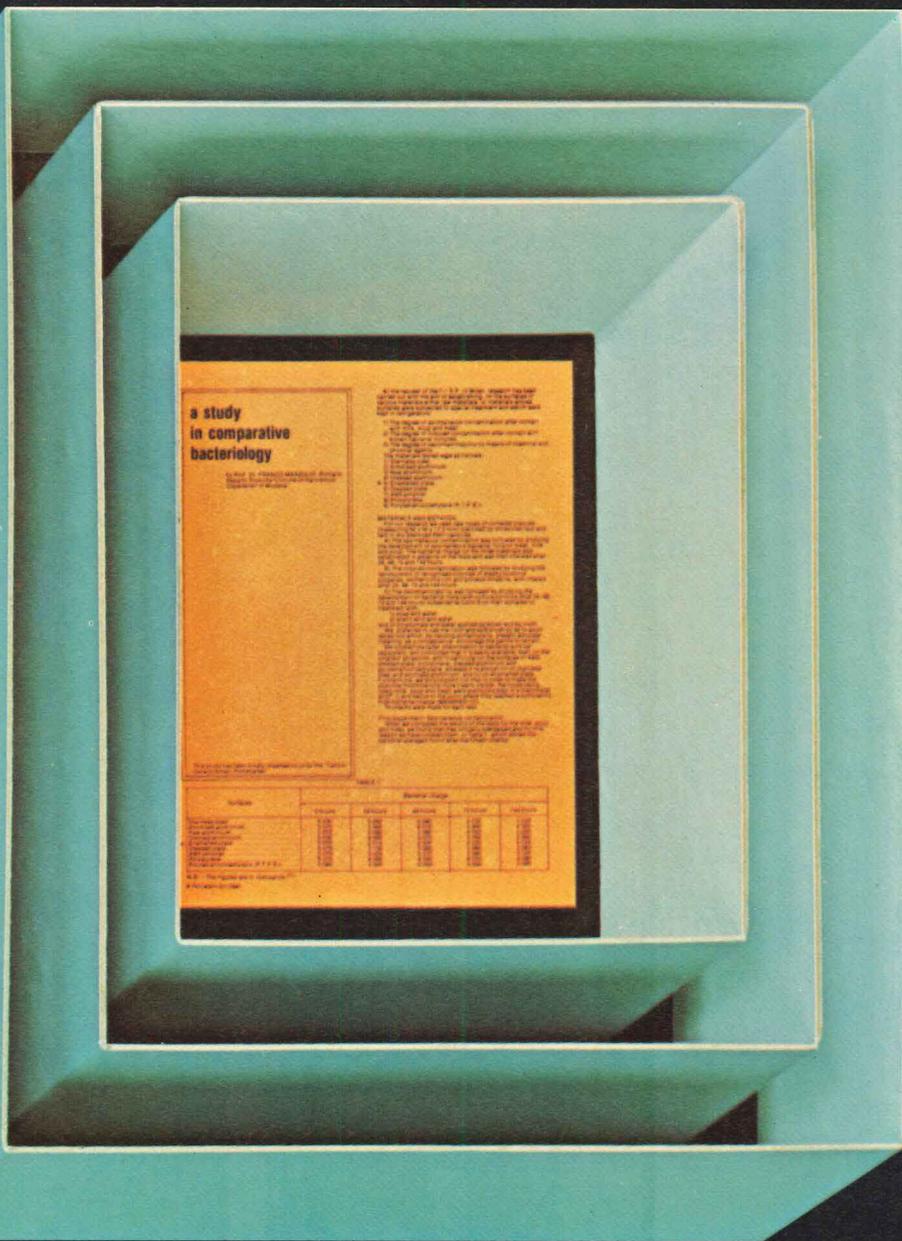


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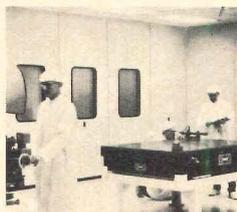
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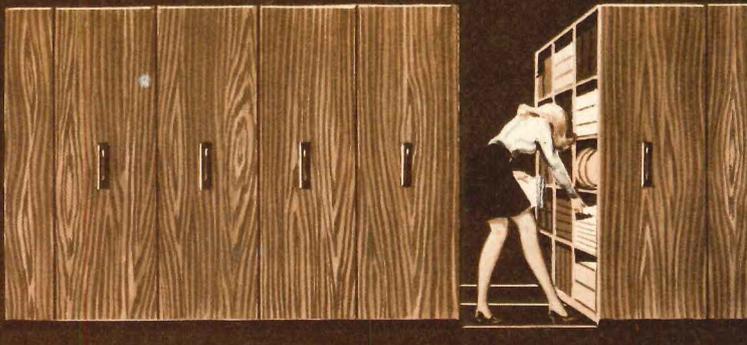


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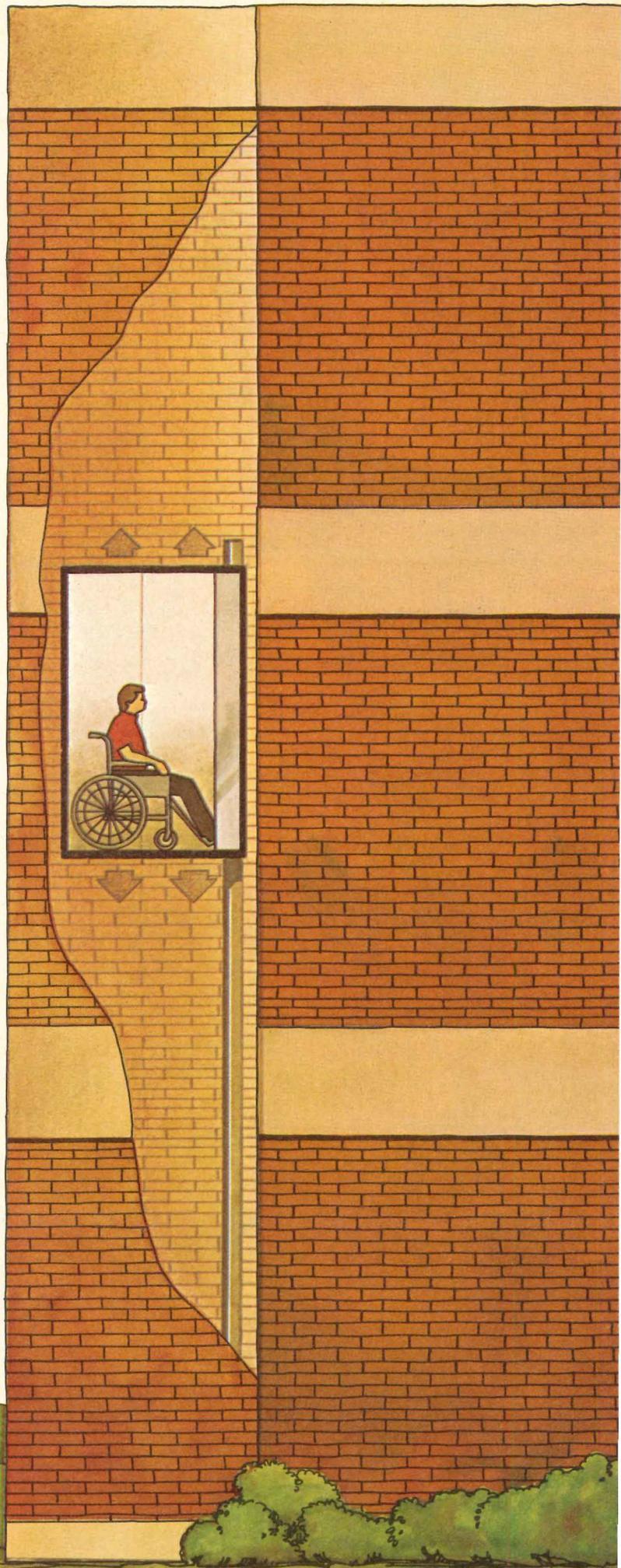
Contact your local Dover Elevator representative for information, or write Dover Corporation, Elevator Division, Dept. B, P. O. Box 2177, Memphis, Tn. 38101.

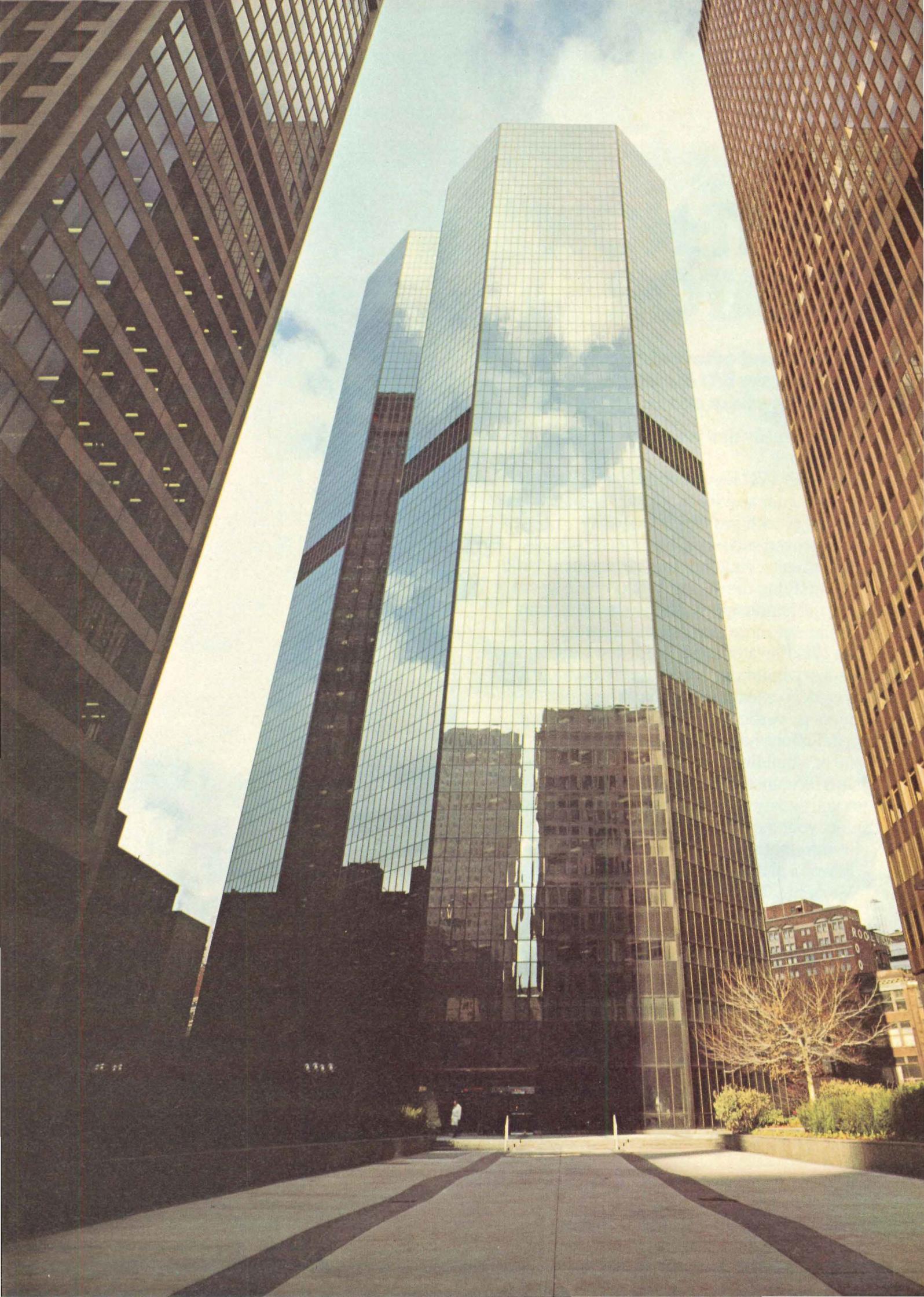


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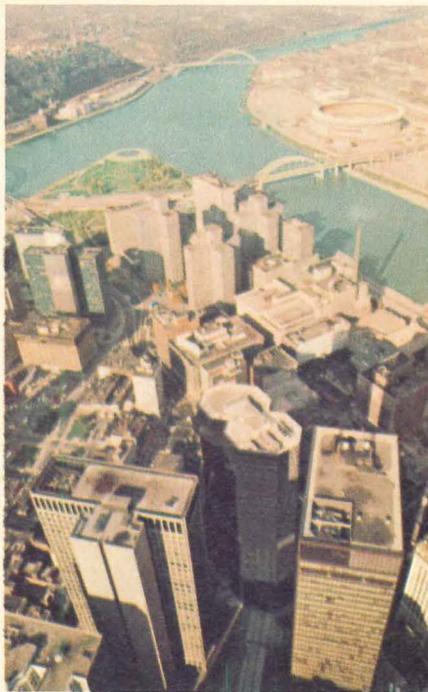
Pittsburgh's Golden Triangle now boasts a new 34-story jewel with 14 glimmering facets. (The two octagons share a side, if you're counting.)

It's the twin towers of the Equibank Building, at Oliver Plaza, sheathed entirely in PPG Solarban® 550 Twindow® reflective insulating glass.

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# News report

## Hotel boom in downtown Atlanta

Within the past year, the number of hotel rooms in downtown Atlanta has doubled with the openings of three major hotels—all within walking distance of each other. First was the Omni International Hotel by Thompson, Ventulett & Stainback. Next came the Atlanta Hilton Hotel by Wong & Tung. Finally, the Peachtree Center Plaza Hotel by John Portman & Associates. All this only a year after the opening of the Fairmont Hotel (by Jova-Daniels-Busby) and 6 months after the Sonesta (by Stevens & Wilkinson).

The three hotels that opened in Atlanta this winter not only mark a change in the hotel industry but also illustrate the new direction that in-town commercial development is taking toward capturing, if not creating, a market for leisure time spenders.

The interior spaces of the three are quite different from each other, but each reflects the influence of John Portman's Hyatt-Regency, built in 1967, in that they establish a carnival-like atmosphere of multiple activities.

Peachtree Center Plaza's "midway" provides guests and shoppers with retail facilities and places to eat and drink—all along the walk from the entrance at Peachtree St. to the main event of the hotel: an interior lake-lobby topped by the 70-story mirrored cylinder of guest rooms and restaurants. The lobby itself is 7 stories high. At the bottom is an acre lake into which the tower deftly plunges its mass. Successive floors tier away from



Atlanta skyline with 70-story cylindrical Peachtree Center Plaza Hotel (center) and the Omni International megastructure, including hotel, (foreground).

the central mass with balconies that lead into restaurants, meeting rooms, and other support facilities. The entire space is enclosed by a continuous acrylic skylight propped against the tower—a visual reminder of its looming presence.

The Atlanta Hilton derives its spatial experience from a stock double-loaded corridor plan arranged into a "Y" floor plan, the intersection being a 27-story-high space broken at the 5th, 12th, 19th, and 27th floors by "space lounges"—private gathering points for conventioners. These also provide alternatives to everyone's converging at once upon the relatively small lobby. Three of the four restaurants, two of the three bar lounges, and all of the meeting and exhibition facilities are on the first three floors. The convention package is as comprehensive as one would expect from Hilton's "flagship" hotel of the Southeast.

The Omni International Hotel, by contrast, elegantly understates its ar-

chitecture thereby placing importance on its guests. Perhaps the hotel's reliance upon other parts of the Omni International and the adjacent World Congress Center for support facilities allows people to feel like guests rather than spectators. Polished travertine floors, book matched teak walls, and plaster-covered ceilings establish an updated Art Deco mood for the lobby. Glass-enclosed elevators (the only departure into the extravagant) rise through an opening in the lobby into the main space of the Omni International itself.

As hotels, these structures are a culmination of an architectural swing from the early "grand hotel" to the barely functional motel of the 1950s to a new architecture of entertainment. In the late 19th and early 20th centuries, hotels were created in the European grand manner typified by the Hotel des Bains in the film, "Death in Venice." Grand spaces, opulent decor, and hundreds of servants existed to delight

News report



Omni hotel by Thompson, Ventulett & Stainback.



James Mount

Atlanta Hilton by Wong & Tung.

View from Omni International Hotel (left) into atrium containing 8 million cu ft space. South wing of the hotel visible on left.



Restored Merchants Exchange Trading Hall now Chartered Bank of London branch.



Looking up to Hilton's "space lounges."

Peachtree Center Plaza (left).



the free-spending guests.

When the Depression reduced people's means, the hotel was forced to change its image and provide service at the lowest price. This coupled with increasing use of the automobile evolved into the motor hotel or motel: a place to park car and body for the night. Then the 1960s presented an economy richer than anyone had seen in decades; Americans had more leisure time and money to spend, and wanted more than an anonymous room with a television and vibrator bed. In 1967, the Hyatt-Regency opened its Atlanta hotel and set off a trend of architectural entertainment for the traveling American. John Portman's creation of spatial grandeur, lighted glass elevators, and spaceship restaurants excited the public imagination while it forced the hotel industry to re-evaluate the "Holiday Inn" ethic.

Designed to gather every imaginable form of urban entertainment under one roof, the multi-use centers are geared to a multitude of tastes and spending styles. Which of these entertainment forms will survive and what sort of permutations will result from placing, for example, a \$100-a-plate French restaurant beside a midway side show will be interesting to watch. In each complex the hotels are the plumage upon the peacock. How the plumage spreads and turns may be the strongest indication of a new trend in American commercial architecture. [Jon Carlsten and Richard Rothman] *The contributors, both practicing architects, also collaborated on the AIA Guide to Atlanta published last year.*

## Rich interiors restored in S.F.

The elegant Trading Hall of the Merchants Exchange building in San Francisco has recently re-opened as a branch of the Chartered Bank of London. Upon the suggestion of Otto Haake, manager of the building for more than 30 years, the bank undertook the \$250,000 restoration. Haake had personally saved moldings, artifacts, and bronze pieces removed by tenants over the years.

The building, which opened in 1905, was designed by Willis Polk, and the interiors were by Julia Morgan, the woman architect who also was responsible for the Hearst Castle at San Sim-

son. William A. Coulter, a marine artist, painted murals for the Trading Hall.

## Architecture exhibit travels in Minnesota

Portions of an exhibition entitled "A Bicentennial Exhibition of Minnesota Art and Architecture," sponsored by the University of Minnesota Gallery and the Minnesota Society of Architects, will go on a statewide tour March 26 and will be on view in 19 towns before coming to a close Dec. 19. The exhibit opened in Minneapolis in February.

The architecture portion of the show included 400 buildings from settlement times through today. Represented are works by Louis Sullivan, Frank Lloyd Wright, William Purcell, George Elmslie, and Cass Gilbert. Among contemporary buildings are Marcel Breuer's library and chapel, St. John's University, and Philip Johnson's IDS Tower, Minneapolis.

David Gebhard, director of the art galleries of the University of California at Santa Barbara, and Tom Martinson, principal planner in the Minneapolis city coordinator's office, are co-authors of *A Guide to Architecture in Minnesota*, a book that will accompany the exhibition. Funding also has been received for an Architectural Encounter Series which will deal with issues in contemporary architecture and historic preservation.

## Cram's Gothic: a latter-day discovery

A New York showing of the first retrospective exhibition of works by America's Gothic architect, Ralph Adams Cram, 1863-1942, of Boston will open May 5 at the St. John the Divine Cathedral, designed by Cram, Amsterdam Ave. at 112 St. The show will remain on view during regular cathedral hours until the end of September.

Nearly 500 guests attended the show's premier at the Boston Public Library in December. Speakers included Harvard professor Kenneth Conant from the Medieval Academy of America, of which Cram was a founder, and historian Douglass Shand Tucci, who organized the exhibition. Tucci said he feels this show is a companion to the earlier exhibition of Beaux-Arts architectural drawings which opened in Oc-

tober at the Museum of Modern Art, New York.

More than 400 works will be in the Cram show, including drawings for St. John the Divine Cathedral, private papers, and lettered scrolls. Some of the works have been donated to the Boston Public Library by the cathedral and Cram's successors, the firm of Hoyle, Doran & Berry. A catalogue will be on sale at the exhibition.

## AIA announces honorary members

Ten individuals from the public sector and three from the Institute's staff have been named honorary members of the American Institute of Architects. The

recognition is given for outstanding service to the profession, and this is the first year the limit of 10 has been extended to include members of the AIA's own staff at headquarters and from local components.

The ten are: management consultant Weld Coxe of Philadelphia; Dr. Dwayne E. Gardner of Columbus, Ohio, executive director of the Council of Educational Facilities and Planners; the honorable Gordon Gray of Washington, D.C., chairman emeritus of the National Trust for Historic Preservation; Andrew Heiskell, chairman and chief executive officer of Time, Inc.; Henry A. Judd, chief historical architect for the National Park Service; Sen. John L. McClellan (D) of Arkansas; S. Dillon Ripley, secretary of the Smithso-



Minnesota post office in New Ulm, c. 1915, part of Bicentennial exhibit.



House, Detroit Lake, Minn., c. 1940 (below). St. Thomas Church, New York, (left) by Ralph Adams Cram of Boston, 1863-1942.



## News report

nian Institution; Vincent J. Scully Jr., professor of art and architecture, Yale University; the honorable Pete Wilson, mayor of San Diego; and developer William Zeckendorf of New York.

The three AIA executives honored are Marie Laws Farrell of San Francisco, executive vice president of the Northern California chapter; Jay C. Leavell of Montgomery, Ala., executive secretary of the Alabama Council; and Ann Stacy of Detroit, executive director of the Michigan Society of Architects and of the Detroit chapter.

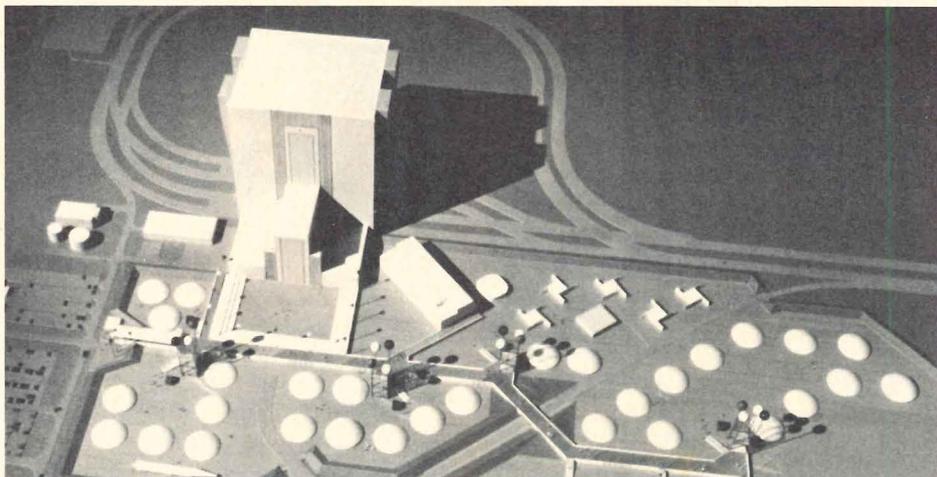
## OSHA conference to be held in May

The third annual Occupational Hazards Safety and Health Conference and Exposition will be held in the New York Hilton Hotel May 11 and 12. Speakers will include officials from government and industry, and exhibits will show a range of 200 safety products. Register by writing the show's sponsor, *Occupational Hazards* magazine, 614 Superior Ave. West, Cleveland, Ohio 44113. Discussion will center around the complex requirements of the Occupational Safety and Health Act (OSHA) and the recent OSHA re-organization.

## Cape Canaveral Bicentennial exhibit

"A Better Life in Third Century America" is the name of a Bicentennial exposition of science and technology to open May 30 at the Kennedy Space

Kennedy Space Center dotted with geodesic domes for Bicentennial exposition.



Center, Cape Canaveral, Fla., and run through Sept. 6. The event was initiated by President Ford and is expected to attract 20,000 visitors daily.

The Department of Housing and Urban Development, the General Services Administration, Department of Transportation, and the Environmental Protection Agency are among 16 federal agencies participating, along with representatives from private industry.

A HUD exhibit expected to cost approximately \$500,000 will direct public attention to both the hardware of new building materials and systems and the software of community planning, safety, and user needs.

The Association of Science and Technology Centers was commissioned to plan the HUD exhibit, and Dorn McGrath, professor of urban planning at George Washington University, is heading the effort. Among consultants are Edmund Bacon, Philadelphia architect and planner, and James Rouse, Columbia, Md., developer. [Ralph Warburton]

## Pei, Gwathmey receive high honors

I.M. Pei of New York is one of four elected to chairs at the American Academy of Arts and Letters. Others so honored are the writer Ralph Ellison, sculptor Naum Gabo, and critic Lionel Trilling, who was elected posthumously. The 71-year-old Academy, chartered by Congress in 1913, selects its 50 members from among the 250 members of the National Institute of Arts and Letters, to which Pei was elected in 1961. Each Academician is assigned a chair vacated by the death

of a member; Pei will occupy chair 33, last held by Thomas Hart Benton. Induction will take place at the annual ceremonies in New York on May 19.

At the same time, Charles Gwathmey of Gwathmey Siegel Architects, New York, will be inducted into the National Institute of Arts and Letters. Among his projects, many of them residential, are dormitories for the State University of New York at Purchase. Also elected to the Institute are writers James Thomas Flexner, composer Jack Beeson, art critic Meyer Schapiro, and painters Alice Neel, Conrad Marca-Relli, Balcomb Greene, and Leonid.

## Housing update in a recovering economy

Since Congress set a 10-year National Housing Goal in 1968 calling for the production of 2.6 million dwellings annually, events have included a housing moratorium, inflation coupled with recession, a new housing act, and a critical drop in the bond market.

The rate of housing production during this time has been an average of 1.7 million starts annually. The all-time peak housing production year in the United States was 1972, when 2,356,600 starts were recorded by the U.S. Bureau of Census. On Jan. 5, 1973, President Richard Nixon declared a moratorium on government activity in housing; in 1974 recession set in, and the following year, 1975, starts through November, were recorded at 1,161,000. Projections for 1976, however, are better ranging from 1.3 million starts to 1.8 million.

The serious loser has been multifamily housing in the low-rent area. Single family housing is off only 10 percent. Section 8, basically a rent subsidy program of the 1974 Housing Act, which was intended to streamline and consolidate most existing programs, has done little for housing although its supporters, led by Secretary Carla Hills of the Department of Housing and Urban Development (HUD), claim more time is needed for its full implementation.

The brightest hope for housing, according to some experts, is Sec. 244, known as the co-insurance program, of the 1974 Act. This, HUD officials are quick to say, is still only under consid- [continued on page 28]

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eration and no date has been set for its realization. If established, co-insurance would mean the government would guarantee up to 90 percent of a mortgage; state housing finance agencies, 10 percent. These guarantees would give more security to investors.

Since New York State's threatened default on bonds, other state housing finance agencies—one of the main backers of low-rent housing today—have experienced difficulty in selling their bonds. The co-insurance would encourage the purchase of these state notes and bonds.

Pilot co-insurance programs will be in operation sometime this year in San Francisco and Columbus, Ohio.

Another government program is the "Tandem Plan," for which Congress has appropriated \$5 billion in Brooke-Cranston funds, of which \$3 billion recently was released for the purchase of mortgages for FHA-insured multifamily projects. These funds are a primer to

help lower the mortgage interest rates, now at 8¾ percent for single-family homes. Said Secy Hills, pointing to the Tandem Plan as one of HUD's successful programs of late, "When you pick up the real estate section on Saturday morning and see houses advertised at 7½ percent interest, you know that is our tandem interest rate."

The seriousness of the housing shortage in the United States has not yet evoked angry demands on the part of consumers or hard-hitting lobby tactics from out-of-work producers. Yet a 1970 study showed 13 million of the 63 million U.S. households living in some form of deprived housing. Deprived was defined as physically inadequate units, overcrowding, or rent too high for family income.

In fact, some parts of the country such as Dallas, Texas, and Memphis, Tenn., are overbuilt in the residential sector, and HUD vacancy surveys show more soft than tight housing markets across the country. Robert W. Maffin, executive director of the National Association of Housing and Re-

development Officials (NAHRO), says statistics tend to bury the urgency of housing needs, which essentially create a dislocation problem. "Supply and demand do not converge."

It may come as a surprise, but Operation Breakthrough, a program conceived in 1969 when housing was a paramount concern in the nation, still is active, though nearing completion of its third and final phase. In all, Breakthrough is responsible for nearly 30,000 units of housing across the country. In the process, it searched out new materials and building technology and explored every method of financing. Interestingly, the knowledge and expertise gained from the program is finding increasing application in the Middle East and countries abroad. Of the 14 companies that have built housing for Breakthrough, five are marketing their systems overseas.

While the only direct federal government building program is the so-called "classic" low-rent public housing of the Housing Act of 1937 (2200 units of [continued on page 31])

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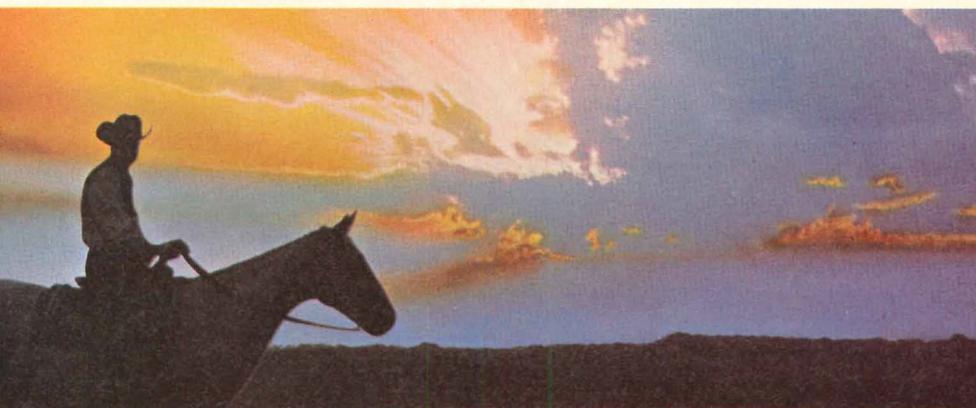
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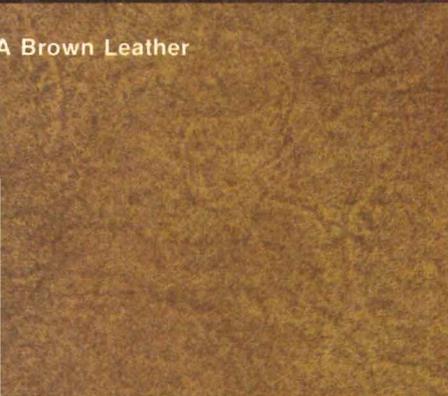
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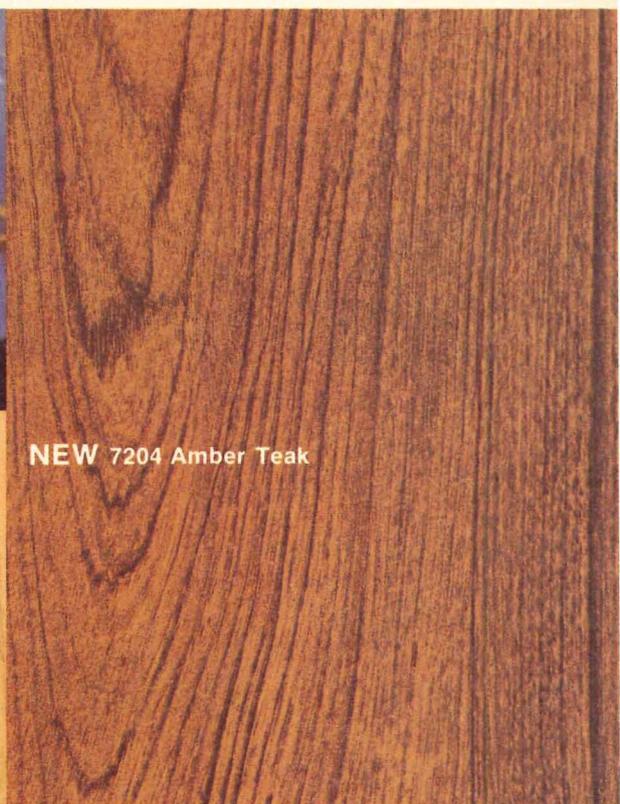
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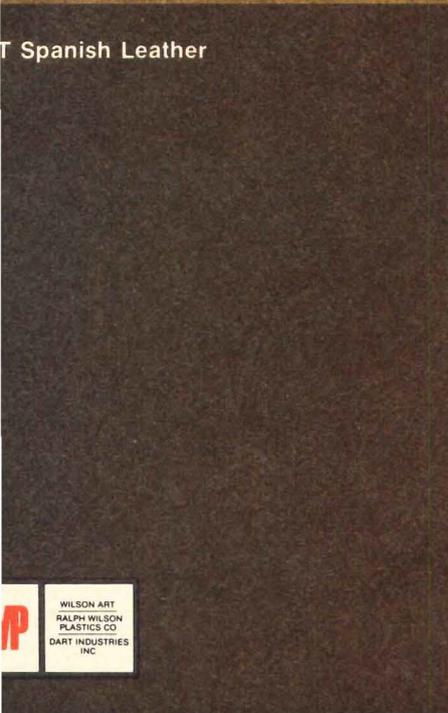
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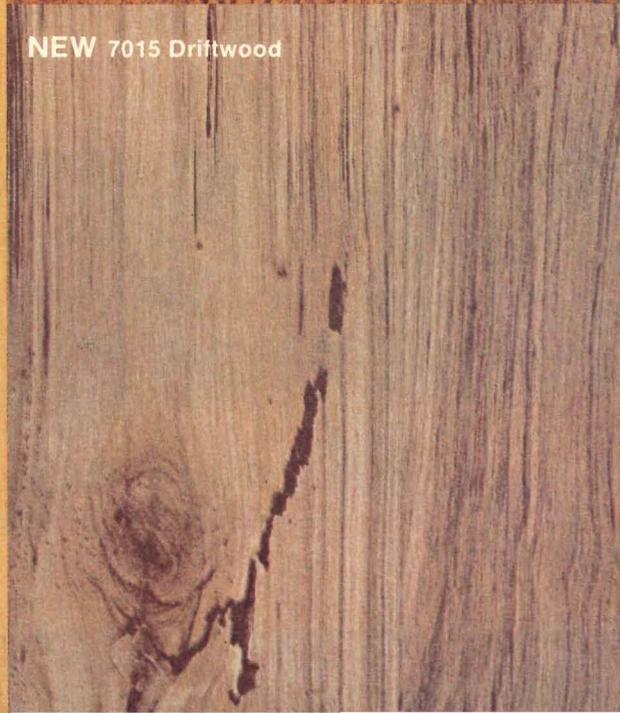
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Operation Breakthrough housing in rural New Mexico are being built under the program), the federal government nevertheless has had tremendous impact through subsidizing the private housing industry. In 1971 nearly one-third of all housing production in the U.S. was attributable to the government interest subsidy programs known as Sections 235, re-activated, though revised, and now-defunct 236.

HUD is operating this year on a \$6.5 billion budget and has asked Congress for \$7.4 billion next year. The Sec. 8 housing goal for the year, set by HUD is 500,000 units. By contrast, the National Association of Home Builders is asking 1.8 million, which the NAHB says is realistic.

In the private sector, home builders apparently have stopped worrying about why the government's Sec. 8—basically a rent supplement not a housing development program—has not generated housing, and are explor-

ing more private means to increase housing production. "I think we're too dependent on the federal government for housing subsidies, and we need to improve the flow of funds into mortgages," said John C. Hart of Indianapolis, Ind., new president of the NAHB. He said savings and loan associations have \$30 billion beginning to find its way into the housing market.

The National Housing Partnership, formed by Congress in 1971 to stimulate production by private enterprise, is responsible for 27,000 units to date, of which 19,500 have been completed. The Partnership also is sponsor for one of the first developments to come out of Sec. 8. The project, in Allentown, Pa., is for 160 units of elderly housing. But George M. Brady, president of the Partnership, said Sec. 8 is not working as it should. Because construction financing is so high, rents an owner-developer would have to charge would not attract residents, even those given rent supplements under Sec. 8. "I can't see," said Brady, "how there will be any housing volume at all under

present conditions."

His is not the only negative criticism of the controversial turn of government housing policy. "Theoretically, this program should've taken off like a comet. On paper it's the best, but HUD's red tape has given it problems," said an administrator in one of HUD's busiest area offices.

Daniel B. Grady, a Southern California builder, said originally 75 percent of Sec. 8 funds were to be for new construction but that HUD has rechanneled them into existing housing. This, according to Carla Hills, is one of the strong points. "I don't regard Sec. 8 as a production strategy," she said. "Indeed, it may be an urban preservation strategy."

For the architect, the appearance of Sec. 8, coupled with economic recession, has brought retrenchment. Speaking against red tape and delay, Joseph Wasserman, co-chairman of the New York Chapter of the AIA's Housing Committee, complains that a HUD-advertised competition for 1200 units in New York has produced no



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winner even after months of consideration. "We're entitled," he said, "at least to a quick finish." Most competing architects spent about \$10,000 in preparing submissions. To these charges a HUD spokesman replied that manpower is lacking to move any faster.

Not numbers but quality of manpower is lacking, counters George Brady, head of the National Housing Partnership. He questions whether HUD has the commitment to housing to bring off a successful program. William J. White, executive director of the Massachusetts Housing Finance Agency, shares this view. "The recent two Secretaries of HUD (Carla Hills and James T. Lynn) have yet to produce any housing. The only housing built has been carried over from (George) Romney. Lynn effectively did not want housing. Secy Hills probably wants housing but doesn't see the need for new construction." [Ann Carter]

## Personalities

**J. Roy Carroll, Jr.**, FAIA of Philadelphia has been elected a Benjamin Franklin Fellow of the Royal Society of Arts, London, England.

**J. Peter Staten**, AIA has been named city conservator of Seattle, Wash.

**Robert Martin Engelbrecht** of Princeton, N.J. has been appointed national chairman of the Innovation and Invention Committee of the National Academy of Science's Building Research Advisory Board.

## Calendar

**Through Mar. 27.** "Form, Space, and Symbol in Chicago Architecture" exhibit, Cooper Union, New York City.

**Through June 13.** "Designing a Nation's Capitol" exhibit of extant original drawings entered in the 1792 first federal architectural competition, at the Octagon, Washington, D.C.

**Apr. 4-6.** "Solar Energy—Fuel and Food" workshop, sponsored by the Environmental Research Laboratory,

University of Arizona, at Braniff Place Hotel, Tucson, Ariz.

**Apr. 7-9.** Conference on creative play environments for children, University of Wisconsin-Milwaukee campus.

**Apr. 11-October.** "Three Centuries of American Art" exhibit, Philadelphia Museum of Art.

**Apr. 13.** Exhibit of ten architectural models by Andrea Palladio, University of Virginia, Charlottesville.

**Apr. 13-June 13.** "A Tribute to Alvar Aalto," The Fort Worth Art Museum, Fort Worth, Tex.

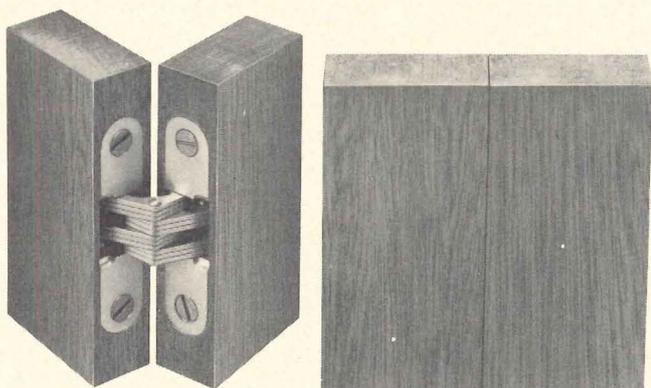
**Apr. 19-23.** Second Southeastern conference on application of solar energy, sponsored by Louisiana State University, Hilton Inn at Corporate Square, Baton Rouge, La.

**May 2-5.** Annual convention of the AIA, Philadelphia.

**May 11-12.** Third annual safety and health conference and exposition, sponsored by Occupational Hazards magazine, Hilton Hotel, New York City.

**May 19-24.** Meeting of the Society of Architectural Historians, Philadelphia. [continued on page 34]

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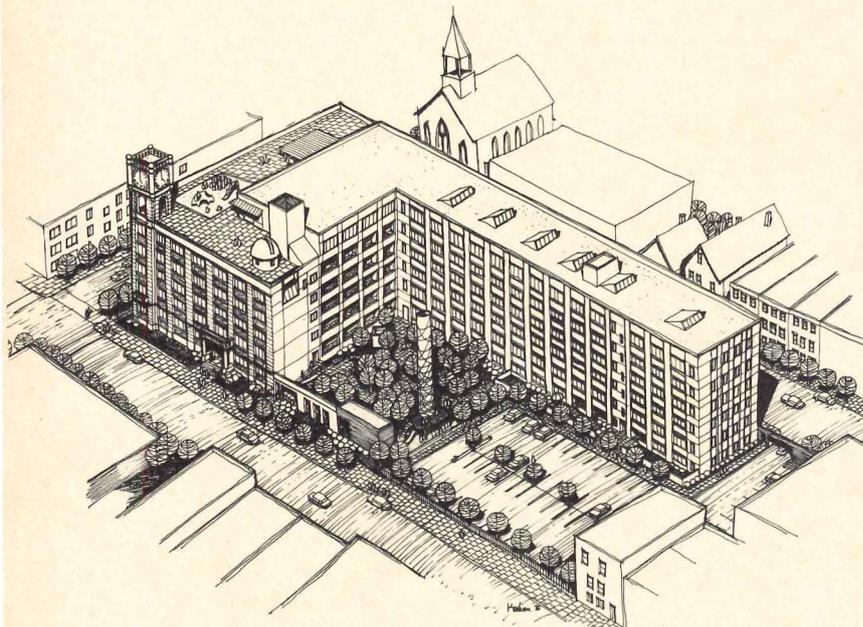
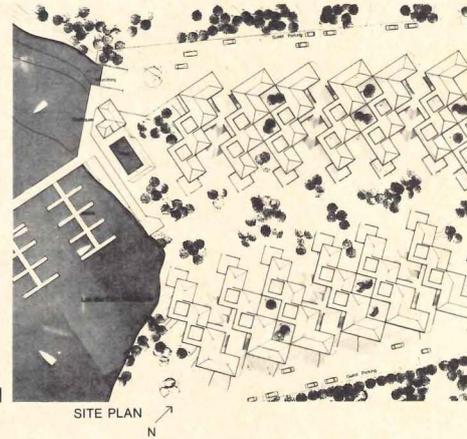
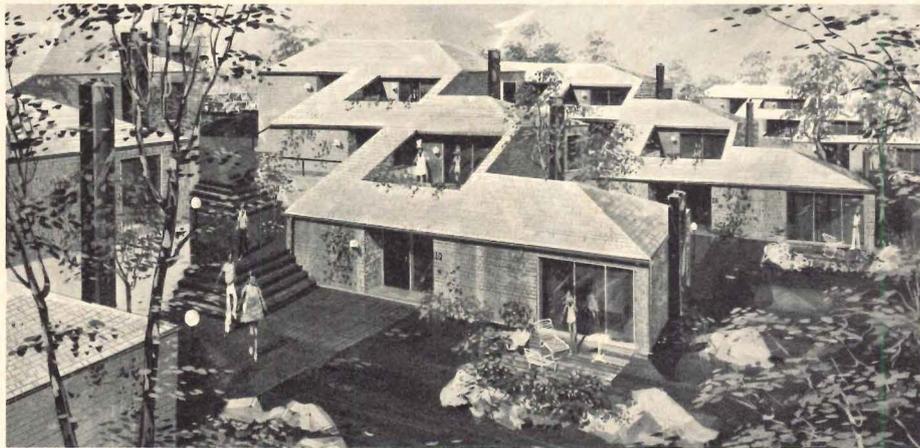
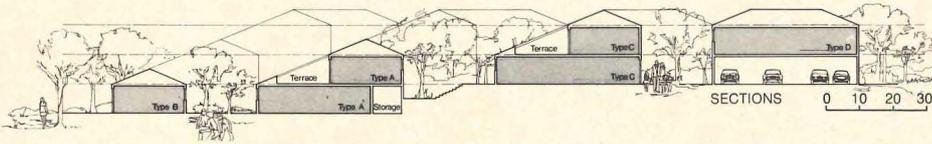
# In progress

**1 Condominiums in Montreal**—A 42-unit condominium project designed primarily for middle-age couples is planned for a lakeside site in Senneville, 21 miles from Montreal, halfway between the city and Dorval Airport. The units are stacked to give each home a view of the lake and a terrace equipped with barbecue grill. Enclosed parking for two cars per unit is nearby as are shared facilities, including a marina and clubhouse. A construction date for the project, by Parkin Architects and Planners, Toronto, has not been established.

**2 Government backs factory housing**—A \$5 million project begun five years ago under the now-defunct interest subsidy Section 236 of the National Housing Act is scheduled for completion in May. A 70-year-old drafting supplies factory in Hoboken, N.J., has been converted into 173 units of up to four bedrooms for rental to moderate-income occupants. Architect for the project is Beyer-Blinder-Belle of New York. According to the developer, two advantages for

converting existing structures such as factories into homes—as compared to new buildings—are reduced construction time (six months less) and costs (30 percent lower). The Hoboken apartments, developed by Volt Information Sciences Inc. of New York, have been under rehabilitation since May 1975.

**3 Pan Am villa**—Housing for the Pan American Games to be staged in Puerto Rico in the summer of 1979 is under construction on a 60-acre site. Sponsored by the Department of Housing, Puerto Rico Urban Renewal & Housing Corporation, the 2300 units will be turned into moderate income condominiums after the Games. Three types of residences are planned, incorporating the tropical idiosyncrasies of the island: terrace apartments, single-loaded mid-rises, and wind-conditioned, double-loaded high-rises. Serving the homes will be commercial, community, and sports centers housed in a multi-level structure. Architect for the project is Basora & Rodriguez under the direction of Enver Azizi.



**Living at Crown Center**—The first residential units at Crown Center, a multi-use complex in Kansas City, Mo., will be ready in the fall. A 30-story tower will contain 133 luxury condominiums, and an L-shaped 7-story building will contain 100 luxury- and moderate-priced rental units, from studios up to three-bedroom apartments. Architect for the two buildings was The Architects Collaborative of Cambridge, Mass. Owner-developer of Crown Center is Hallmark Cards. When completed in the 1980s, the center will include 50 buildings containing a daytime population of 80,000 and housing 8000.

**5 Houston brand of housing**—A subdivision of moderately priced housing has been designed by William T. Cannady & Associates of Houston for a speculative developer. Walker's Mark will have 190 units in a style reminiscent of the German settlers' wood construction homes in the mid-1800s. A graphics theme based on the branding iron mark was developed by Sasaki, Walker, Roberts of Sausalito, Calif., for identi-

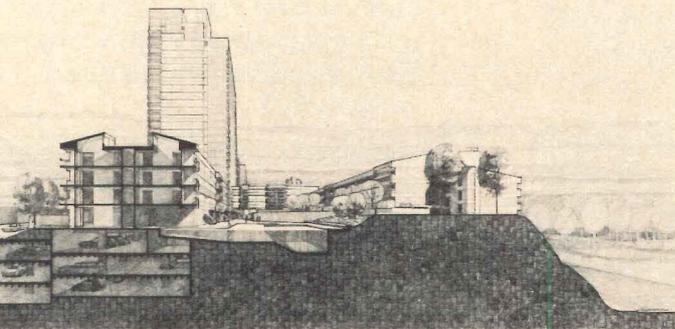
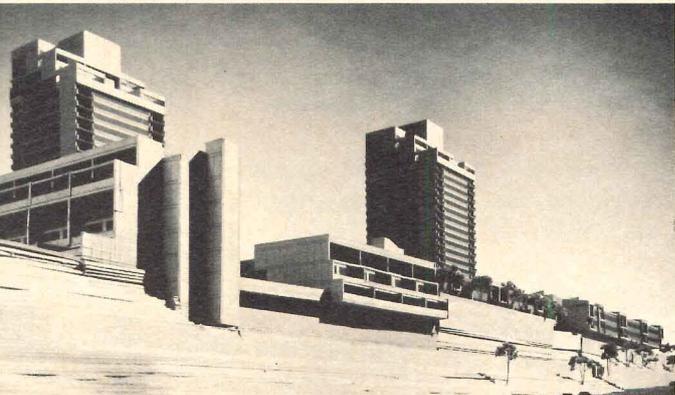
fication and a directional system. Site planning acknowledges the auto age by providing adjacent thoroughfares for pedestrians and vehicular traffic thus providing for lively sidewalk activity. It was the intention to get away from the traditional "green finger" plan of under-used open space.

**6 Casa 75**—A density of 27 units per acre has been achieved by Montreal architect Dan S. Hanganu for a condominium project to enter construction in May in Montreal. By interlocking units, the density gained is higher than conventional row housing. The concrete modules are distributed on either side of an elevated pedestrian street that spans the garages, thereby giving each home its own outside entrance, garage, garden, and terrace. The units themselves are split-level; 3- and 4-bedroom houses organized around a two-story, naturally lit central space. Precast concrete planks span bearing walls of preassembled concrete blocks. Exterior materials are brick and metal siding.

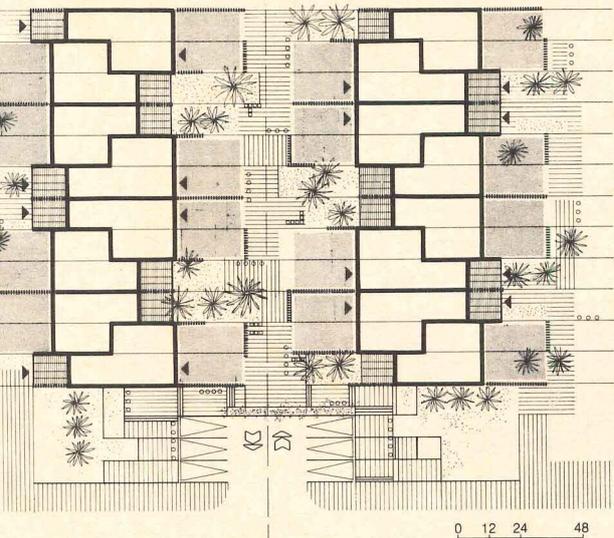
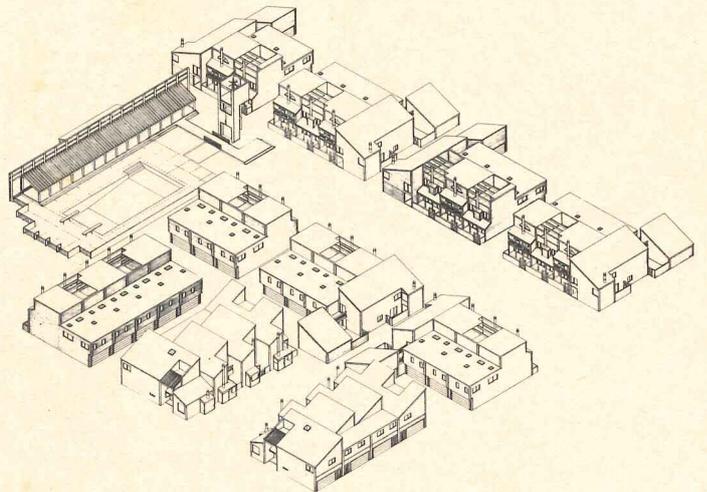
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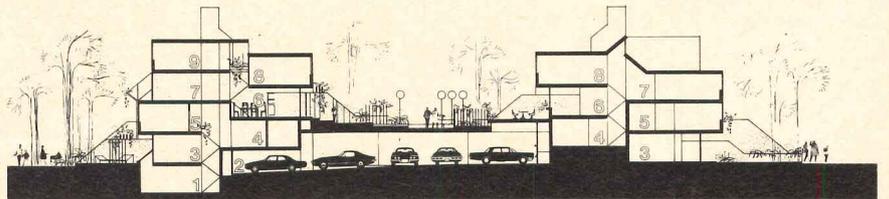
Robert Harvey



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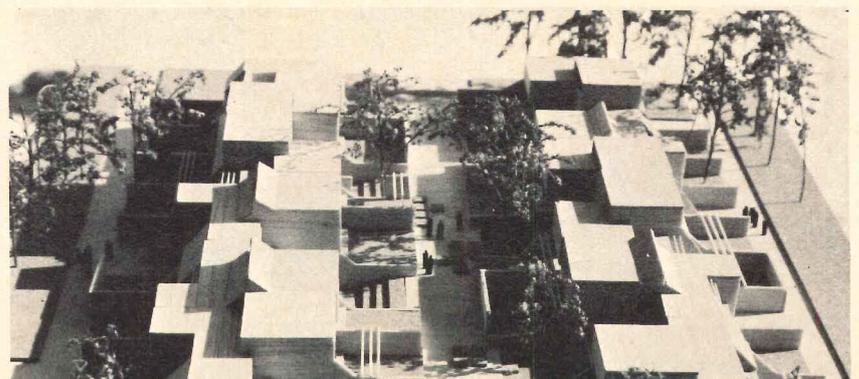


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# Housing choices

March 1976

There is considerable irony in the title of this issue, "Housing: high-rise vs. low-rise," and in our coverage now of high-density urban housing. For the completion of so much innovative urban housing in recent months is a touching reminder of the economic reversals we have suffered since these projects were initiated.

The issue of high-rise vs. low-rise—and the other choices represented in the housing discussed here—will re-emerge as valid ones only with recovery in housing construction for architects and their public. But first, a few other, more basic, issues will have to be resolved.

**Housing vs. none:** We are dealing today with a federal administration that would prefer, ideologically, to extend subsidies to the tenant, rather than the developer of housing. Obviously, this could eliminate many of the inequities and abuses of past housing programs. Rules on tenant eligibility could still be a tangle of contradictions, but the subsidized tenant would presumably be free to put this money into housing of his choice, which would quite possibly be situated *outside* subsidized ghettos. In theory this sounds commendable, but in practice it demands corresponding encouragement of housing production and rehabilitation—or else the subsidy money will merely drive up the rent levels for everyone. Until recently, it appeared that state agencies would be the vehicle for housing production (or, of course, rehab) with some federal backing, but the discredit of state agencies in the bond market has crippled that effort.

We can be confident, however, that governments at various levels will work out mechanisms for delivery of housing in reasonable amounts. The need remains all too apparent, as do the opportunities in terms of investment, employment, and other economic benefits.

**High density vs. low:** Efforts toward a sound national housing policy have always been hampered by the American dream of the rose-covered cottage—more recently the Contemporary Split Ranch Estate—which colors virtually every personal and public decision affecting housing.

The social benefits of high-density living should have been made clear 15 years ago by Jane Jacobs (*The Death and Life of Great American Cities*, Random House, N.Y.,

1961) and by the torrent of urban studies that has appeared since—if not by personal recollections of life in places such as the North End, the Grand Concourse, Chinatown, or the 7th Arrondissement. Yet now, as the larger cities play out the sad roles assigned to them by decades of federal and state policy, fewer Americans than ever are likely to appreciate the charms of urban life.

While the bucolic dream remains entrenched, however, the realities of economics are working steadily to make high-density living both more probable and more popular. The cost of heating (or cooling) the house and of commuting to work are looming steadily larger in individual budgets; family units are becoming steadily smaller, their interests less home-centered. The impact of suburban sprawl on agricultural land is beginning to raise alarms, and the defenses of suburban municipalities are getting stronger and more justifiable. If low-density development is required to defray its actual cost to the municipality, development will be deflected back toward places with existing infrastructures of utilities, transportation systems, schools, parks, etc. There remain, of course, great obstacles to be overcome back in the city: inflated land values, the disproportionate tax burden of the poor, the menace of crime.

**High-rise vs. low-rise.** If we are to build high-density housing in the future—and we will—there remains the controversy over whether it must be kept near the ground or whether it can be stacked high for the sake of economy or other amenities. The articles that follow take up this question in its various aspects. Examples of completed work shown here demonstrate, in the judgment of our editors, the most promising architectural directions for high-density residential development in the U.S. To some extent, they also deal with the issues of *housing vs. city*: they recognize—though not adequately—that connections must be made between high-density housing and other urban elements—shops, offices, schools, playgrounds, etc.—to yield the full potential satisfactions of urban living.



# Upstairs, downstairs

**If the only requirement of housing is that it protect people from the cold, the difference between house and housing may not be all that great; but what of the qualities of life in an urban dwelling? How high is up?**

Urban housing, as we have come to understand, poses a more complex problem than merely one of quantity. Building adequate numbers of new, subsidized dwelling units to replace "substandard" dwellings seemed to be the early measure of success, but just housing people under minimum FHA standards began creating new problems at the same time that it attempted to solve the old ones. Increasing vandalism and problems of tenant security and safety were the first manifestations of discontent and trouble. Oscar Newman, in his book *Defensible Space* cites certain types of physical characteristics—high-rise slabs with long corridors, unattended lobbies and vast greenswards separating buildings from one another and from the street—which seem to reinforce these problems. Just building shelter wasn't enough, obviously. There were other needs that had to be satisfied. But the solution to the problems caused by large-scale building of subsidized housing required a change in attitude as well, perhaps, as building type; quantity could no longer become the prime objective.

The New York State Urban Development Corporation, one of the most enlightened public agencies responsible for building housing, began to establish its design criteria for housing based on qualities of life. Insofar as any of these qualities are definable, measurable, and capable of being communicated, this was a major effort to make housing more than "dwelling units." The UDC's criteria focus on such issues as direct access to the ground for low-income families so that children would have additional play space and could be easily supervised by their mothers; cross-ventilation, not only for reasons of comfort, but also to provide more than one orientation; room sizes and layouts that allowed some use options and permitted varying furniture arrangements; elimination of long corridors as undefined turf. Beyond the individual units and building, the UDC's criteria also dealt with the territorial aspects of the site development, so that the space did not become a se-

curity threat to those living there. A prototypical application of these issues of livability, security, and community can be seen in the low-rise, high-density Marcus Garvey project in Brooklyn (P/A, Dec. 1973, p. 63), designed by the Institute for Architecture and Urban Studies and now nearing completion. It is a 12-acre site with 626 units, of which 40 percent are 3, 4, or 5 bedrooms. The four-story rows of housing have a ground floor slightly below grade so that access to the large duplex units is only one or one and a half stories above grade. All the units, which have two exposures, front on a public way, either a vehicular street or a mews, and overlook private yards on the backside. While each four-story "house" has more than one family under its roof, the row house model on which much of the site organization and unit criteria are based, is very evident, and it may well prove to be a significant start in making the transition from dwelling unit to home.

But what of the qualities that are less easily measured and understood—the more personal values—which the house has traditionally embodied, but which its aggregate accumulation, called "housing", seems to lack. The single-family house is a measurable, socially defined totality: the physical manifestation of "family" that must, within its physical bounds, encompass many different domains and attitudes. The house has a public front and a private back. It has an upstairs and a downstairs, communal space and private space, enclosed space and open space, as well as a ceremonial entry. Its physical limits can be totally occupied and understood by the individuals within from the basement to the attic, and the relationship of the various parts to each other and of the whole to its immediate context becomes clear.

Even in an urban context, the historic model for the single-family house maintains these different domains, both in the allocation of its spaces and its relationship to the street and urban block. The ritualistic nature of the communal living patterns of the "family" have changed so little that a house built today does not differ much in its functional aspects from houses built during earlier periods of Western civilization.

The transition from house to housing in this country began in the urban row house in the middle of the last cen-



Sharon Lee Ryder

ture. With the coming of industrialization and the unprecedented influx of immigrants who provided cheap labor, the cities, particularly New York City, were experiencing a population growth at a rate with which they were not able to cope. As New York City grew northward, the vacated row houses in Lower Manhattan were sub-divided to accommodate as many as 10 to 20 families where one had lived previously, often with four to eight people in one room.

The tenement, the first type of speculative, multiple dwelling, appeared not long after the first converted row houses and, within 10 or 20 years, became the scandal of New York and the *cause célèbre* of social reformers. These structures were notorious for packing even more people into less space, without any thought of adequate light or ventilation. As a consequence, legislation had to be passed to establish minimal standards and, with the enactment of the "new law tenement" act in 1901, public and privately sponsored competitions abounded among architects seeking to produce the best plan and the most efficient use of New York's 25' x 100' building lots.

Although post-World War II housing may now be 20 or more stories, clean, new, and in compliance with the building codes, its spatial concepts are the same as those in the converted rowhouses or tenements. "Housing" has become a slice of the sky, bounded by four walls, shared with four other occupants, at some indeterminate distance from the ground. There is no longer a front or back, an up or down, but only one dimension. The ground is somewhere below, the sky somewhere above, and the occupants somewhere in between. Domains become polarized as public or private, with some undefined turf serving as a link. The dimensionality of this type of space does not allow the inhabitants to relate to a larger whole in the more familiar ways. Existence becomes cellular as it becomes more aggregate, and one can only speculate about human adaptability required to accommodate to these circumstances. Given the lack of spatial extensions and choices, the artifacts of existence seem to play an increasingly important role in defining where we are. The crystal chandelier, the chintz curtains, or the gilded mirror must serve as the physical extensions of our identities, in place of the usual spatial dimensions of the house.

It seems curious that the urban row house model, built in large measure through speculative development was adopted, 125 years later, by the UDC as an alternative to the high-rise tower. It's taken 100 years of architectural theorizing about the way people should live to realize that theories can not create new realities. In 1961, Jane Jacobs' advocacy of a low-rise, high-density, mixed-use urban organism, based on her observations of an existing urban fabric, was rejected by the planning profession whose elaborate theories (tower in the park, high-rise slab, etc.) were being called into question. But even Jacobs' theories, when subjected to the bureaucratic process, the costs of land acquisition, and the economics of construction, emerge battered and compromised to the point where it is hard to assess their relevancy or success, except to realize that the nature of the current determinants of the urban environment which we accept without much question seem antithetical to such notions as low-rise, high-density.

If the economics of development dictate high-rise dwelling, then high-rise becomes a necessity, and we might accept these necessities as inevitable outgrowths of some predetermined vision of progress. Such "necessities" however, preclude certain choices. The row house, the historical model for many European and Eastern U.S. cities, served the wealthy on a grand and lavish scale and the working classes on a much more modest scale; although many were speculatively built, all were privately owned or leased. If anything, this is now the exception. These same dwellings, today, have 10 apartments between two parallel masonry walls 20 ft wide and five stories high. They really don't offer much of an alternative to other types of housing. Yet, the alternative to the one-dimensional, cellular slice of the sky for those who prefer city dwelling, should not have to be the pastoral countryside, suburbia, new towns, or even Los Angeles. The problem is in the attitude that equates progress with growth, but to suggest that growth be limited to the point that the economics of building do not play such a dominant role in determining our choices would be easily regarded as heresy in the free enterprise system. So instead we pay a price, for the lack of choice means, at best, a compromise; we are, in the end, victims of our own system. [Sharon Lee Ryder]

# Greener pastures

**Town Center Housing at Runcorn adopts the longstanding urban traditions of city planning as a model for its development.**

For a country that has such a strong sense of urbanity, even in its smallest villages, England has shown an overriding tendency in new town planning to the opposite extreme. Perhaps this is a result of Ebenezer Howard's search for an alternative to the unhealthy living conditions of heavily industrialized cities; his concepts, outlined in *Garden Cities of Tomorrow*, were based on total separation of function. Although the unsanitary conditions which provoked Howard's book were remedied long before many new towns were built, these cities, now built to alleviate both a housing and job shortage, have retained many suburban qualities.

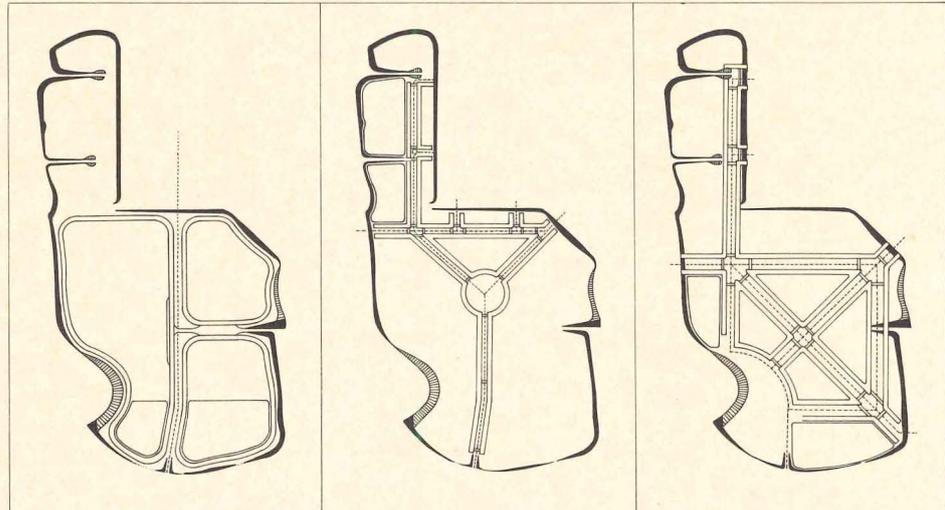
The new town of Runcorn appears, fortunately, to be off to a better start. Located almost midway between Liverpool and Manchester, the town seems to have more sense of urbanity about it than most of its predecessors. The attempt here, if not a total integration of mixed use, is to provide at least a close relationship between the town center and some of the housing.

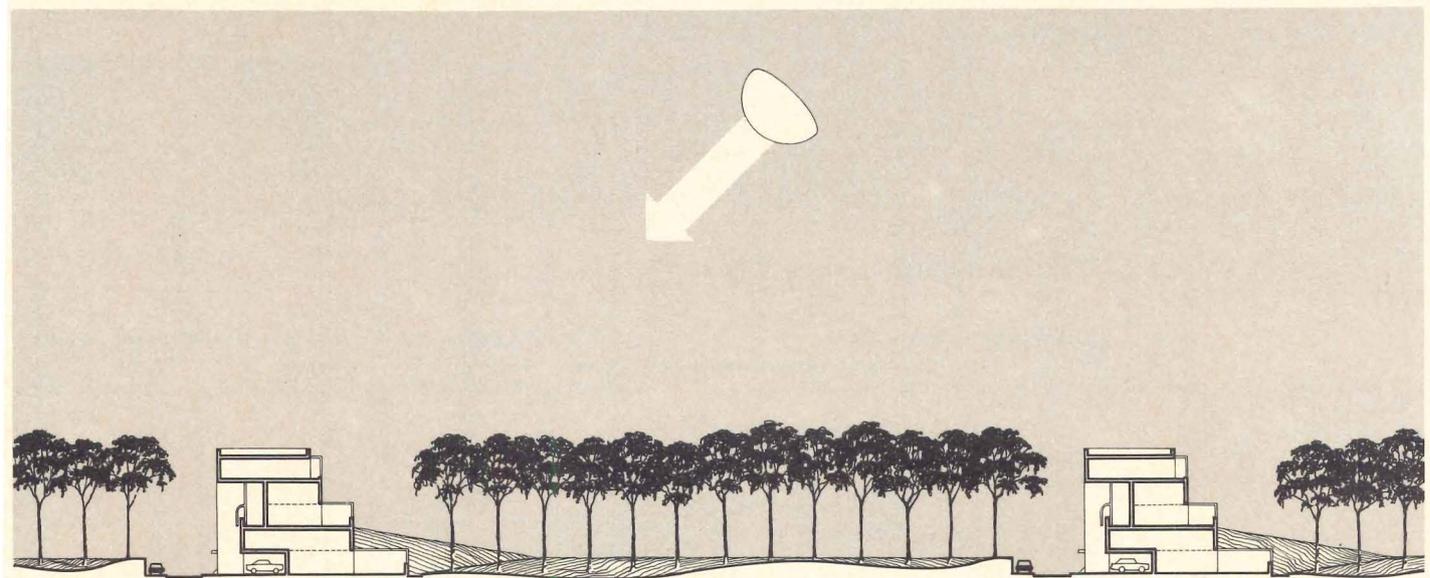
James Stirling & Partners began the design of 1500 units of low-cost housing for 6000 people in 1968 on a site adjacent to the then-planned town center. Early schematic site plans drew on the urban organizing traditions of the square, crescent, and circus so prominent in Bath, Edinburgh, and London. But these schemes finally had to be abandoned for ones which were more repetitive and less costly to build. Nonetheless, the overall site planning for the 1500 units still draws on these precedents with some major variations worth noting.

The rows of housing, or terraces as they are called in England, are used to create a variety of residential squares of differing sizes and orientation; the smallest being 300'x300' or identical to the intimately scaled Queen's Square in Bath, the largest is twice that size. But unlike the more traditional plan of street grid and square, the

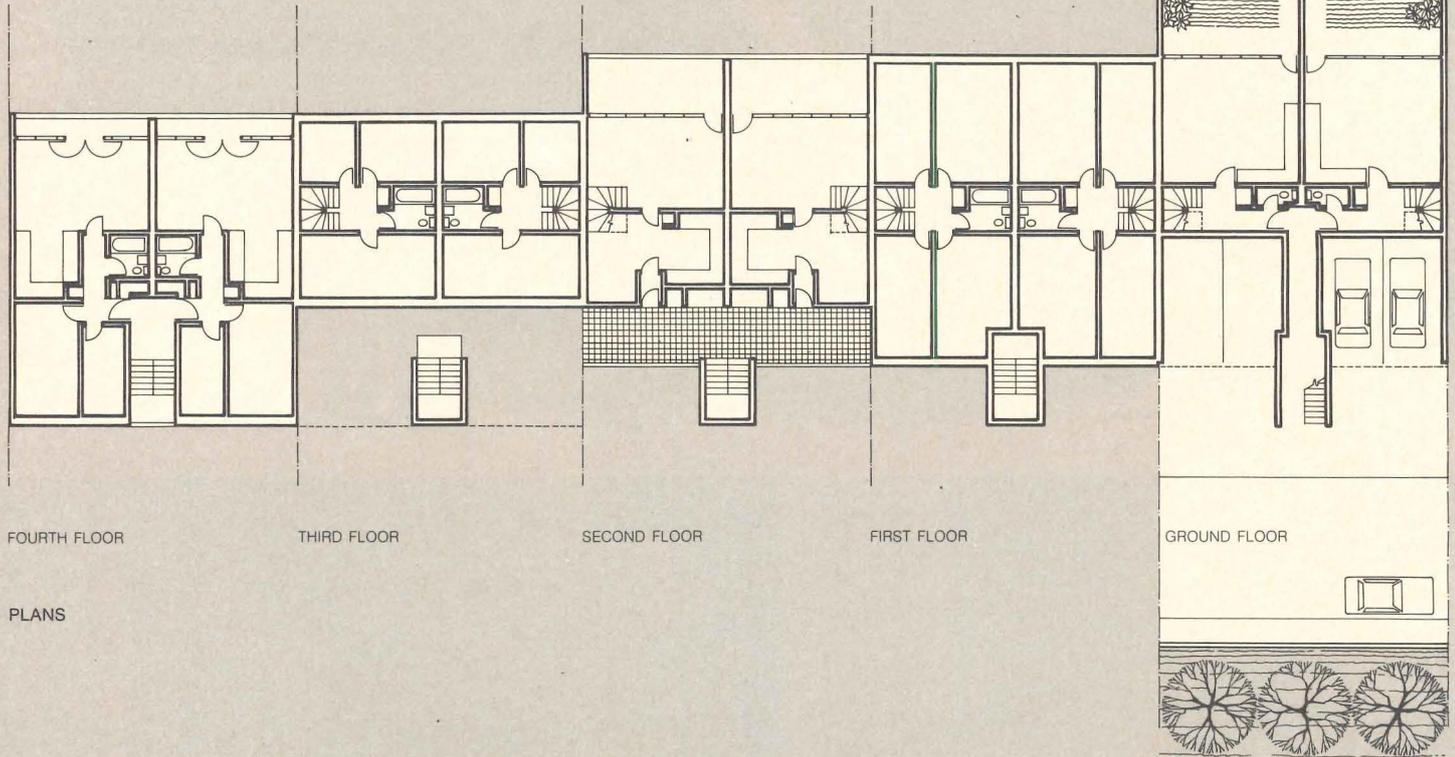


Early schematic site plans (below) draw on the historical traditions of city planning throughout Europe. Section (above, right) shows the relationship of the housing terraces to the vehicular street and the green squares. Photo (at right) shows pedestrian walkway system used throughout.





Town Center Housing, Runcorn, England



FOURTH FLOOR

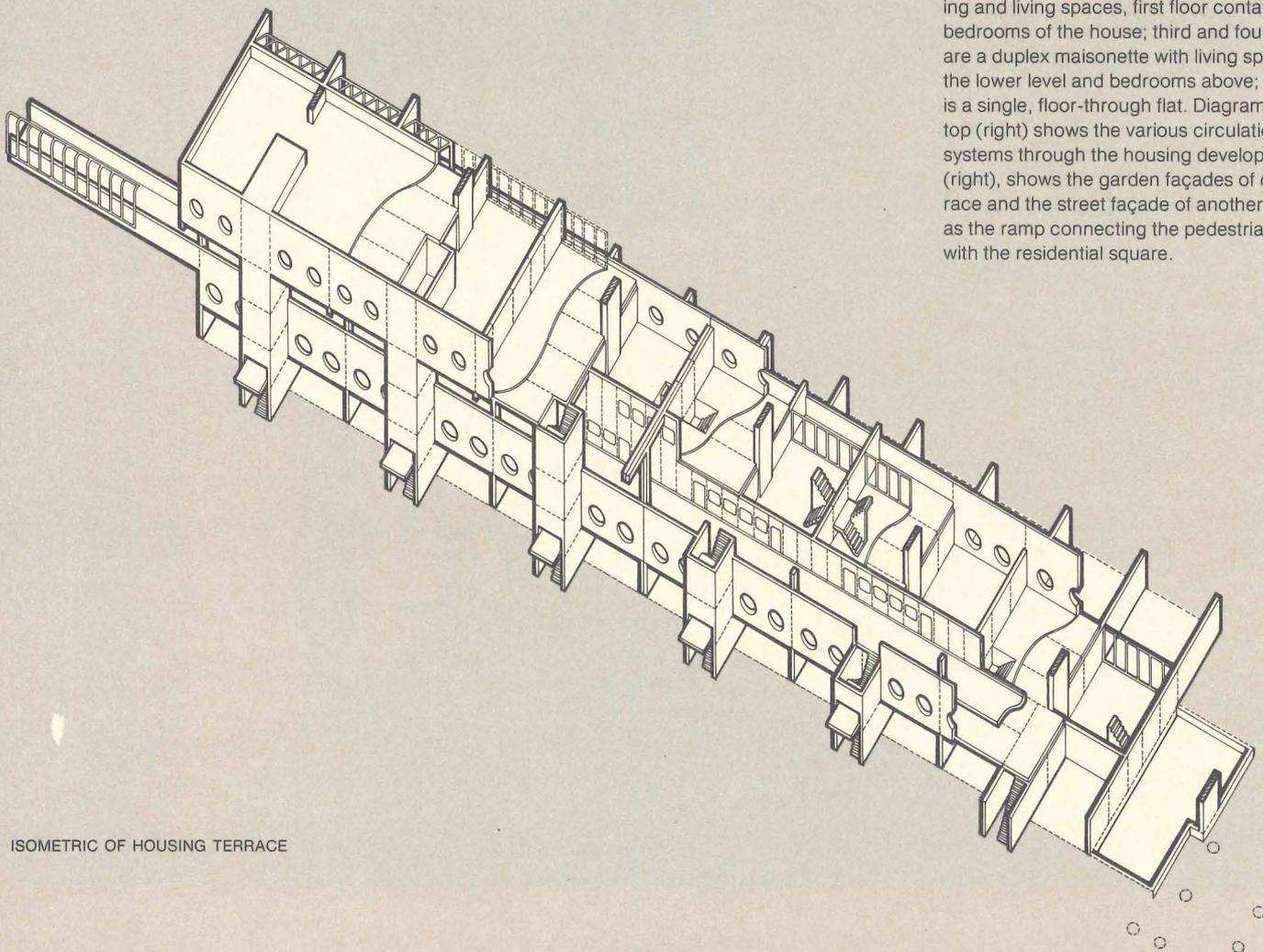
THIRD FLOOR

SECOND FLOOR

FIRST FLOOR

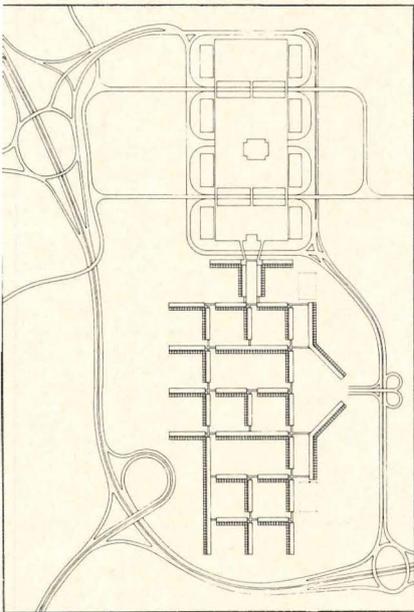
GROUND FLOOR

PLANS

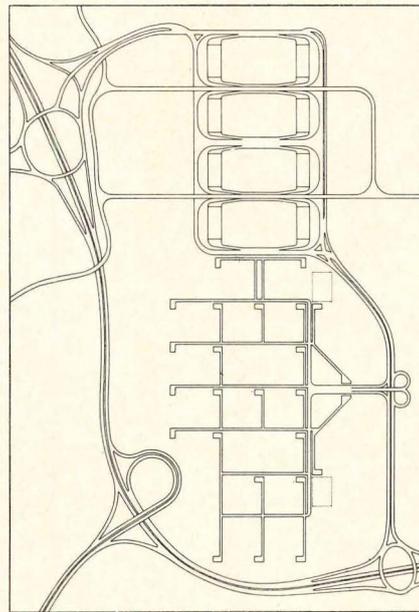


ISOMETRIC OF HOUSING TERRACE

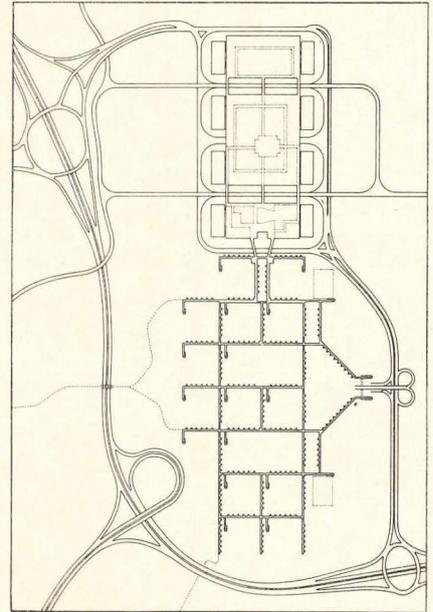
Plans of the five levels (above) are, beginning right to left: ground floor of house with parking and living spaces, first floor contains the bedrooms of the house; third and fourth floors are a duplex maisonette with living spaces on the lower level and bedrooms above; top floor is a single, floor-through flat. Diagrams at top (right) shows the various circulations systems through the housing development. Photo (right), shows the garden façades of one terrace and the street façade of another as well as the ramp connecting the pedestrian walkway with the residential square.



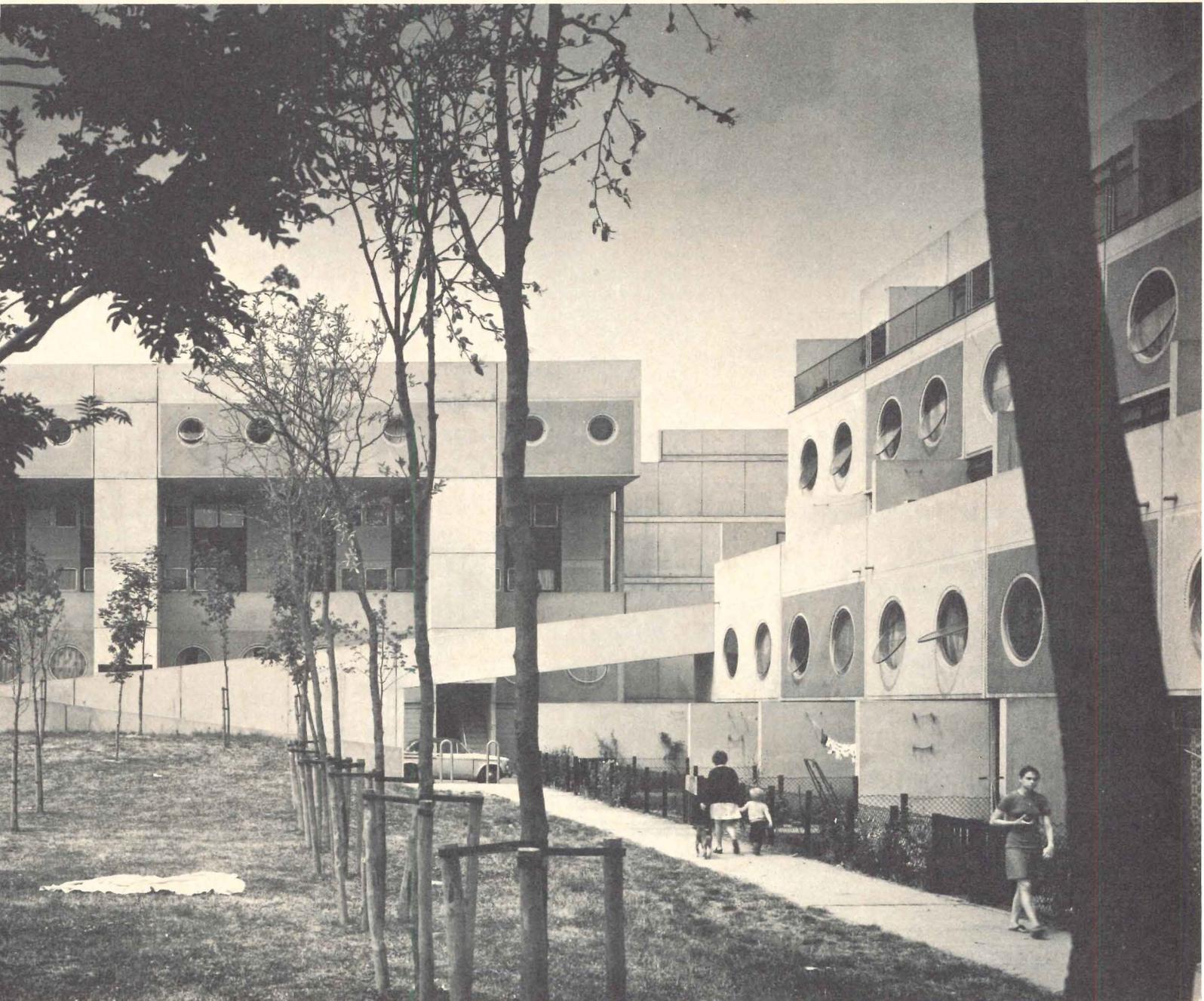
HOUSING



VEHICULAR



PEDESTRIAN





site planning for this development uses a cul-de-sac system to cut down on the amount, as well as the speed, of the automobile traffic. There are no through streets; all traffic feeds from a main artery which connects either to the town center or the Motorway. In another departure from the more traditional plan, the squares are bounded on two sides by the street façades of the terraces and on the other two sides by the garden façades of the remaining terraces. The cul-de-sac system permitted every unit to have direct pedestrian access to the open square since it became unnecessary to surround the square with an access road. Where the road does serve as a boundary on two sides, it is screened from view by a 5-ft-high retaining wall.

The landscaping of the open space also reflects the two different orientations; two formal rows of trees line the street edge and randomly spaced clusters are used along the garden façades. Because of the development's density and proximity to the town center, the only set of through con-

nections are pedestrian. An elevated walkway, created by the setback of the maisonettes and protected by the overhang of the top floor flats, connects the terraces to each other, to the shopping level of the town center and to the squares via a ramp. Open space replaces the typical corner (usually created by butting two buildings); the open corner through which the walkway passes will, at a later time, house commercial uses such as laundries, pubs, shops, etc., as needs arise.

The terraces themselves present two different faces: the street façade, monolithic, with small punched-out openings and a stepped-back garden façade with balconies and large windows. The orientation of the housing is inward toward the square, which all the living spaces overlook. The terrace blocks are formed by repetition of a single, five-story unit comprising a duplex house on the ground and first floors, a maisonette on the second and third floors, and a single flat on the top floor. The repetition of this single element with the differing size accommodations en-

sures an even distribution of age groups and family types through the development.

As in all low-cost, government-sponsored housing built in England, the bureaucracy maintains tight control over the cost. For this reason, an industrialized building method was used to allow as much off-site fabrication as possible. The system uses precast concrete load-bearing walls and floors, and is similar to many of the industrialized systems used in this country. A diagonally ribbed, precast concrete panel is used as infill, except along the elevated walkway where a glass-reinforced polyester panel of varying color is used to provide a less abrasive surface beside which people will be walking.

All in all, this housing seems a refreshing bit of urbanity in a type of situation the solution to which so typically has tended toward a dispersed suburban plan, both here and in Europe. And despite the seeming monolithic character of the scheme on paper, the quality of the built place is much softer and gentler than might be expected. One might also have wished for a more varied site plan had costs permitted—just some small fragments that are part of the rich and complex experience of places like Bath. Perhaps when designers and their clients acknowledge such experiences as necessary, not optional, we will return to building more than imitations. [Sharon Lee Ryder]

Interior of an apartment looking from the kitchen through the living room.



#### Data

**Project:** Town Center Housing, Runcorn, England.

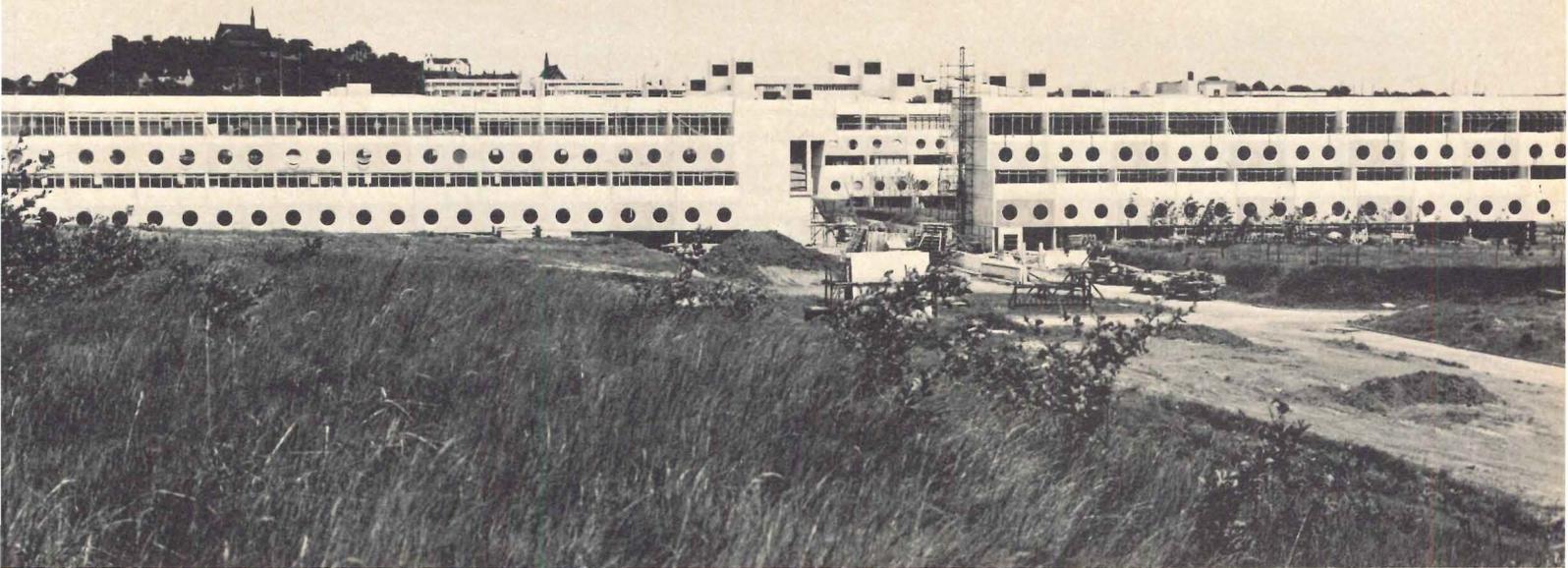
**Architect:** James Stirling & Partners; Michael Wilford, partner in charge; Peter Ray, Brian Riches, associates; David Falk, Julian Harrap, assistants.

**Program:** when completed, 1500 units of housing for 6000 at a density of 117 persons/acre on a site adjacent to the new town center at Runcorn.

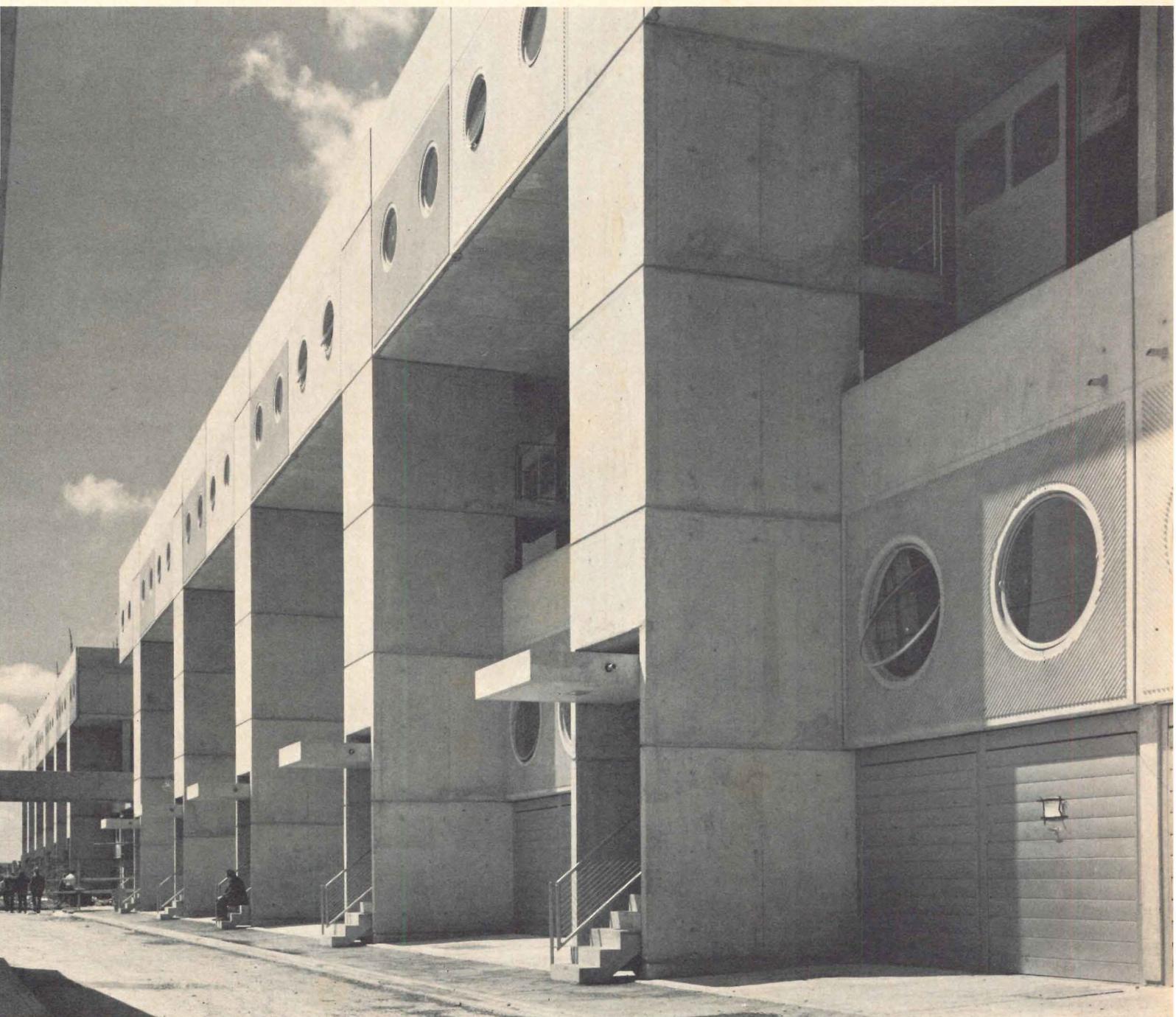
**Structural system:** precast concrete load bearing walls and floor slabs.

**Major materials:** pre-cast and poured-in-place concrete with glass reinforced polyester panels.

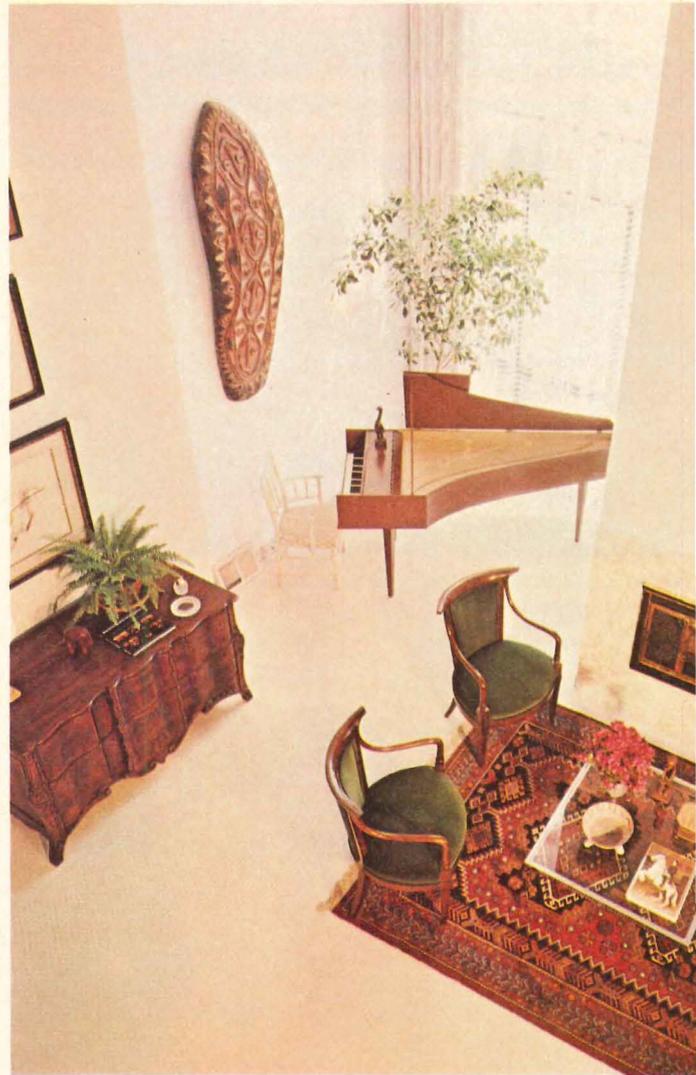
**Photography:** Brecht-Einzig, Ltd.



Street façades of housing terraces (below) have garages at ground level and stair towers providing access to the walkway and upper floor units.



# Urban suburban



Façade scale shifts on outer units at Penn's Landing Square in response to context; inside, some apartments have double-height living rooms.



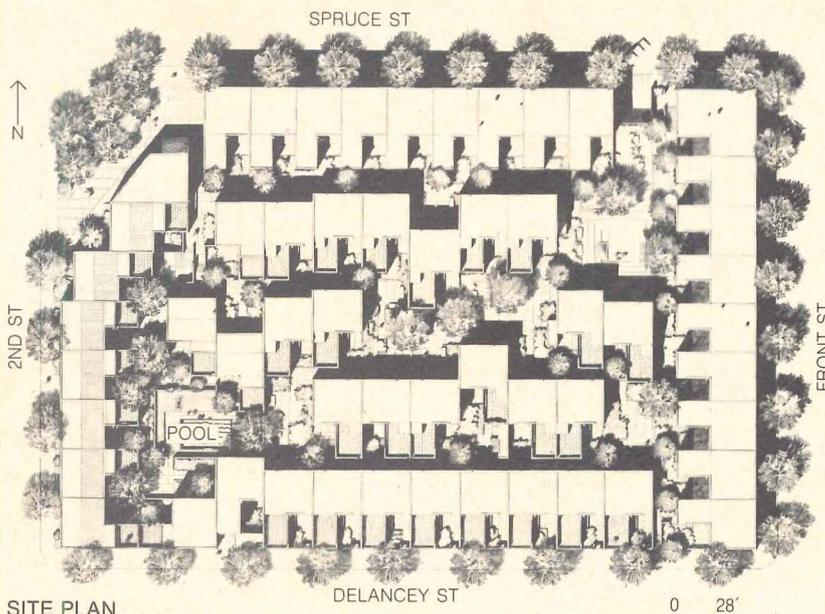
**Something about Louis Sauer Associates' Penn's Landing Square in Philadelphia's Society Hill is appealing to suburbanites.**

There is a strange phenomenon in Philadelphia these days. Suburbanites are moving back to the inner city. They are not coming in droves, and they are not moving just anywhere; they are coming to Penn's Landing Square. "Since completion there has been a rather high percentage of former suburbanites living here," architect Lou Sauer notes, "and now that the 85 apartments are being converted to condominiums that percentage seems to be rising." The 18 townhouses, however, have been condominiums from the beginning.

What is it about this three-story, densely clustered—over 50 units per acre—complex that is bringing people back to the city? It is probably not that most of the units, which range from one to four bedrooms, have a garden or outdoor deck, that there is a swimming pool, or that the units are distributed throughout a beautifully landscaped garden courtyard. These attributes can be found elsewhere, where they do not attract the same kind of people. The fact that Penn's Landing Square is located in one of America's most historic and most beautiful neighborhoods is also probably not the main drawing card, since the rest of Society Hill has not seen a great return of suburbanites. It is not that these things are not important; they surely are, but as the site plan quickly shows, one predominant aspect overrides all the others: Penn's Landing is, in essence, a fortress. It is not that "undesirables" couldn't get in if they wanted to badly enough; but what is important is that Penn's Landing reads very clearly as impenetrable.

Connected units ring the perimeter of the city block site, with tight, locked entries only at three corners. Residents don't park their cars on the street and walk to their homes; they drive directly into a locked underground garage that occupies most of the below-grade level of the site. From there, exits lead to ground level only at certain points well inside the outer ring of connected units. For added security, TV intercoms are available for each unit. To increase the sense of privacy, each apartment has its own private entrance. In addition, there are no lobbies, public stairways, shared corridors, or common interior spaces. Perhaps more than anything else then, security and privacy are the keynotes in Penn's Landing's appeal.

Some of the neighbors in historic Society Hill are not, however, as happy with the complex as those who live in it, as architect Sauer is ready to admit. "People living nearby resent it because they can't go in," he notes, and adds that "they also object to the lack of symmetry of the façades." But Sauer points out that even though the complex is modern in design, conceptually, it is not too distant from the 18th- and 19th-century houses nearby. Like them, it's exterior is red brick, and it is built hard up on the street to form a "wall" in

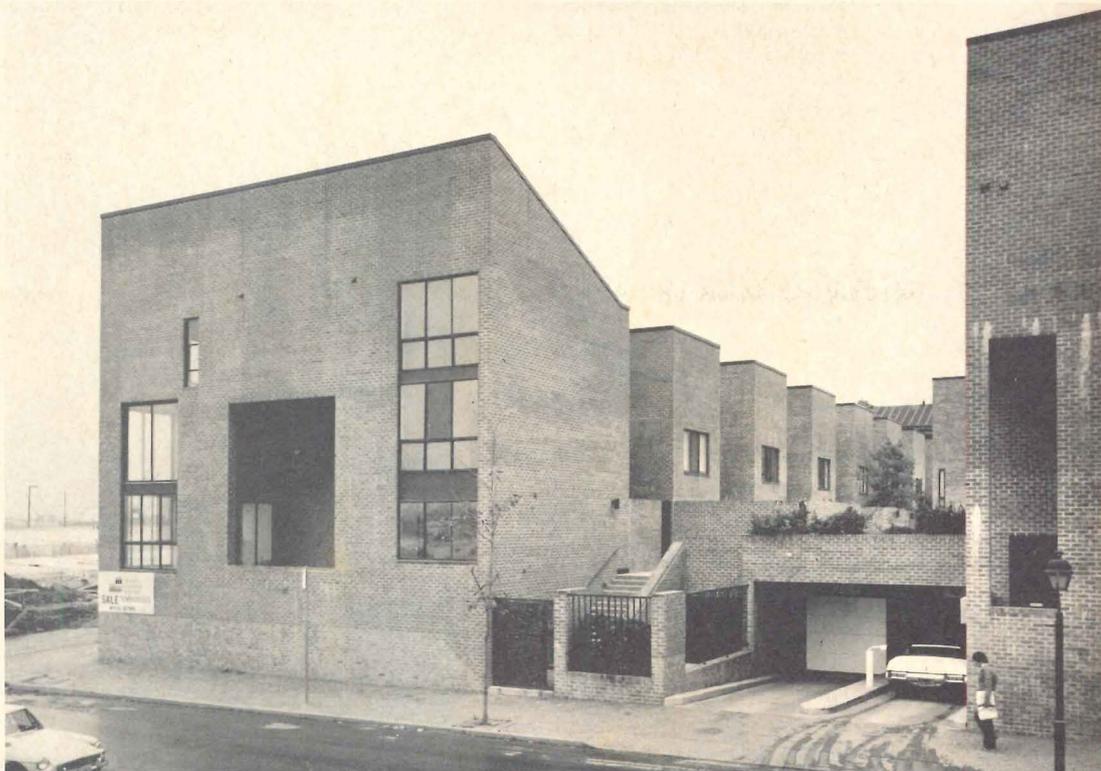


SITE PLAN

Well-protected inner courtyard can be entered only at three secured places.



Front and Second Street façades (facing page top, bottom) and Delancey and Spruce Street façades (above, below) show varying scale treatments.



## Penn's Landing Square

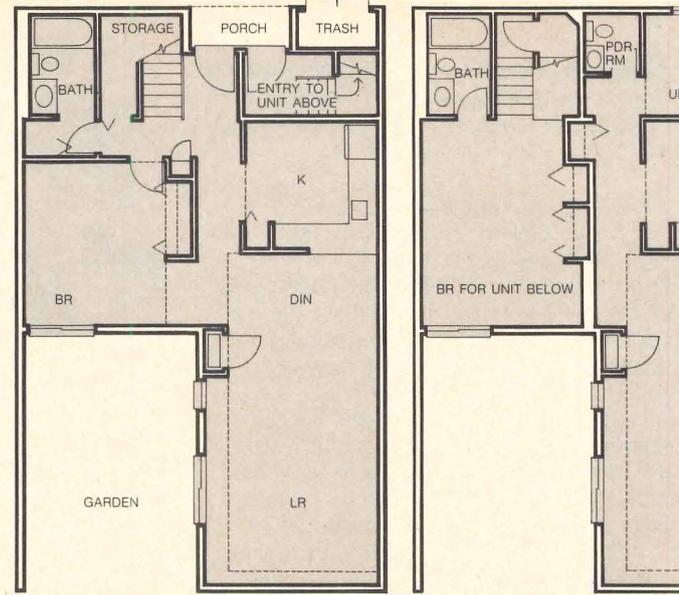
the same way the old houses do. "We're dealing with the skin here," Sauer explains, "with taut, punctured skin, which is the traditional way to build in Society Hill." And as far as symmetry goes, Sauer points out that the historic structures in Society Hill rarely show a symmetrical façade. They are small-scaled, though, and so is Penn's Landing when it faces them, as it does on Delancey and Second Streets. On Spruce Street, however, where the complex faces Pei's huge Society Hill Towers and park, and on Front Street, where it faces the Delaware River and I-95, the scale changes dramatically. "On these sides," Sauer says, "we had to hold the city edge, and a small-scale treatment wouldn't have done that."

The site had been cleared for some time before Sauer was commissioned to design the project, so there was never a question of preserving anything that might have been there. The old houses that were there were unsalvageable; they were last used as food warehouses during the final years of Society Hill's decline, when it had become a warehousing and residential slum in the late 1950s and early 1960s.

One of the most exciting aspects of Society Hill's renaissance is that the historic neighborhood hasn't been "pickled" in the way that others have—Williamsburg, for instance. Mainly through the offices of former executive director of the City Planning Commission Edmund N. Bacon, Society Hill has not been overly neo-colonialized or cutesied up. Modern design has been encouraged, whether for infill projects nestled between older houses or for whole city blocks, such as Penn's Landing. And it is probably largely because of this that the Hill has not become a static museum neighborhood, but has blossomed into one of the most vital and integral parts of Philadelphia's residential community.

The key restraint at Penn's Landing, Sauer notes, was that the redevelopment authority limited the project to three stories. When it was originally planned—at 25 units per acre—this was not a particular problem. But when the developer changed, and the density was doubled, something obviously had to go, and that something was the courtyard space. It became more densely built up and consequently much more "complicated" by small, tight spaces than originally planned. But the residents seem to like this; the sense of privacy seems more intense than it might have been at a lower density, and this is recognized as one of the main drawing cards.

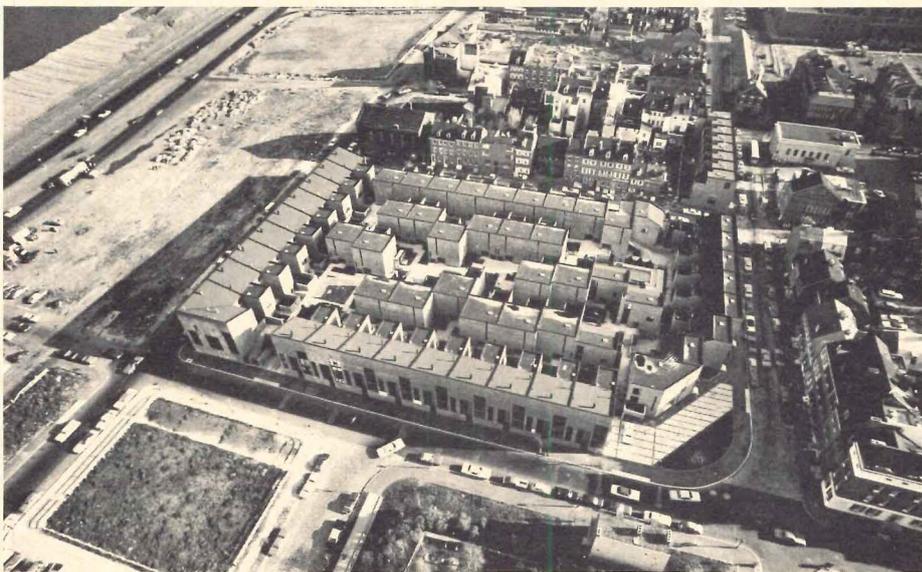
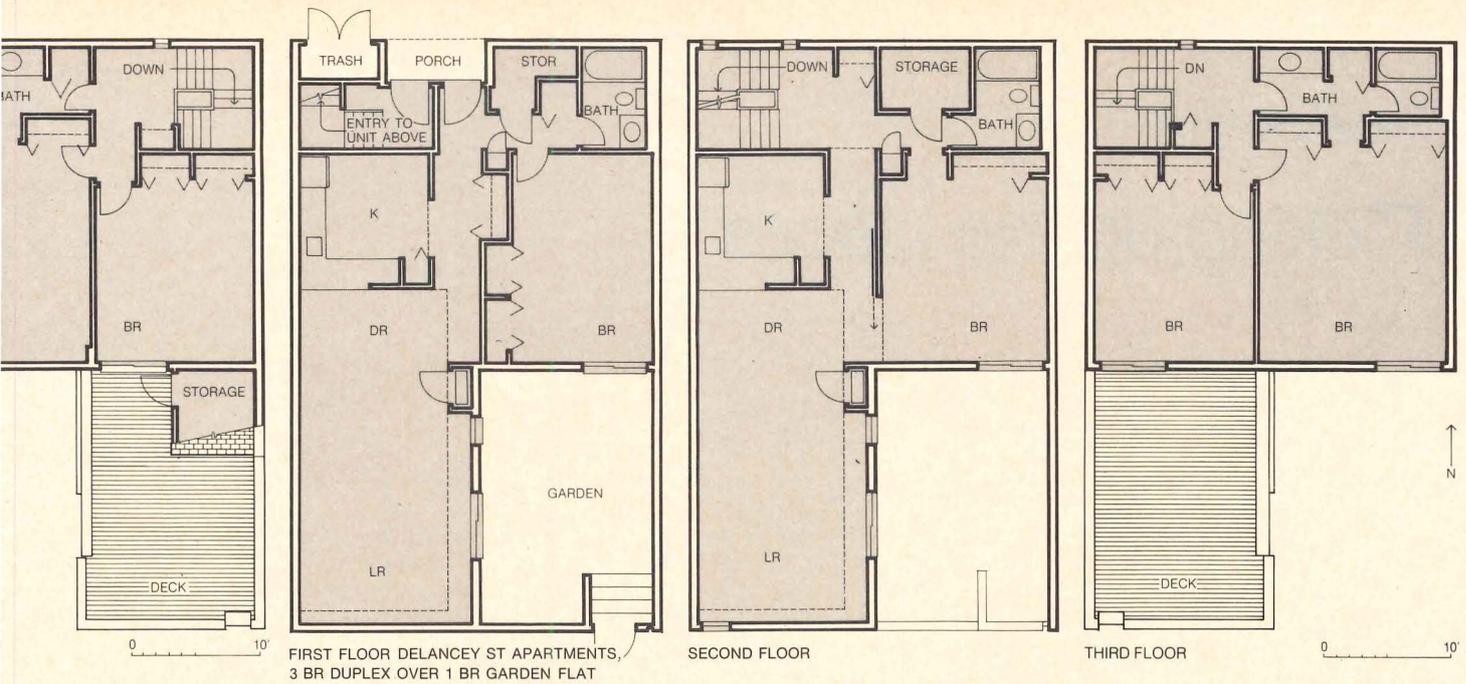
Lou Sauer has had more than 15 years' experience building in Society Hill, and he knows the ins and outs well. To have gone through a major design change in mid-stream, still emerging with something as successful as Penn's Landing, and at \$21.65/sq ft, is testament to that knowledge and experience. [David Morton]



FIRST FLOOR COURTYARD APARTMENTS,  
2 BR DUPLEX OVER 2 BR GARDEN DUPLEX

SECOND FLOOR





Aerial view (above) from Society Hill Towers, with riverfront expressway, left. Inner courtyard is private and "tight"; Society Hill Towers (below) in background.



#### Data

**Project:** Penn's Landing Sq, Philadelphia, Pa.

**Architects:** Louis Sauer Associates, Philadelphia, Pa.

**Program:** clustered one- to four-bedroom townhouses and garden apartments; originally planned at 25 units per acre, later changed to over 50; most units have garden or outdoor deck; 18 townhouses, 85 garden apartments.

**Site:** 1 city block (2.3 acres) in historic Society Hill facing Delaware River and I-95; site previously cleared through urban renewal; high-rise not allowed.

**Structural system:** townhouses: wood frame floors and roofs, masonry bearing walls; garden apartments: precast concrete floors, masonry bearing walls, wood truss roofs; underground garage: precast concrete frame and deck. Different systems used for maximum economy of construction; precast concrete floors used for acoustic isolation in apartments.

**Mechanical system:** individual packaged forced-air heating and air conditioning units.

**Major materials:** brick chosen to harmonize with surrounding historic area; oversized brick used for economy. (See Building materials, p. 98.)

**Consultants:** Collins & Dutot Partnership, landscape; Joseph L. Hoffmann & Associates, structural.

**Client:** 91338 Corporation; apartments since sold to Bell-Penn Corp.

**Costs:** \$3,732,000, \$21.65/sq ft.

**Photography:** Norman McGrath, except p. 48 top left, Otto Baitz; p. 48 top right, p. 50, p. 51 top left, David Hirsch.

# Picking up the pieces

**After slum clearance failed to provide the solution to urban housing ills, more radical alternatives have been sought including the reuse of some existing tenement structures.**

The idea of undertaking the renovation of large blocks of tenement buildings seems on the surface to be contrary to the most enlightened objectives of providing shiny, new, low-income subsidized housing for most of the nation's decayed urban areas. But, if one were to consider demolishing all tenement structures in New York City to make way for new construction, one would end up leveling close to half of Manhattan and nearly all of the Bronx.

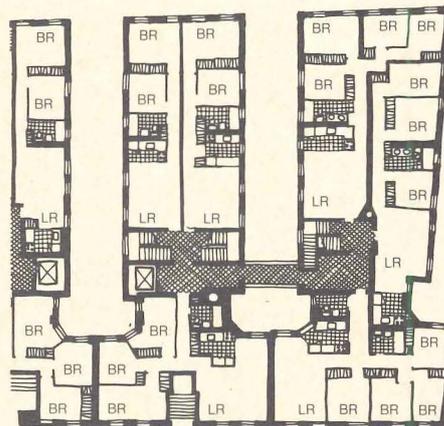
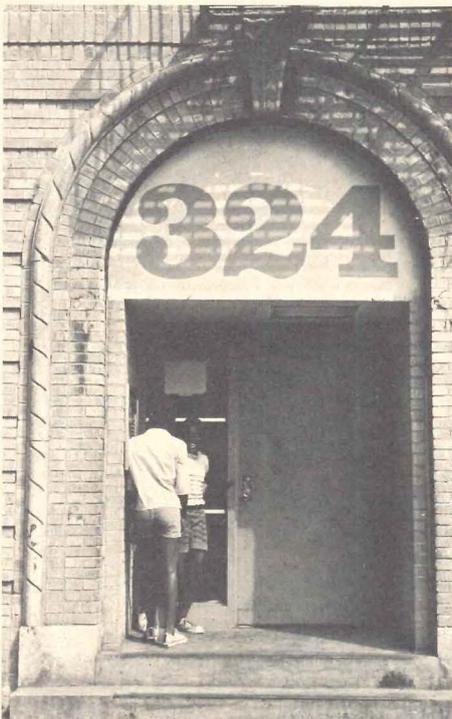
Many of these tenements, examples of one of the earliest forms of speculative multiple dwellings, were originally built for the middle class, but with the increasing

migration of the more affluent working classes to the suburbs, most of this housing stock was left to the urban poor who could not afford the journey to the greener pastures. Rising taxes, increased maintenance and fuel costs, stricter enforcement of building codes, and growing vandalism, together with rent control legislation, began to make these buildings unprofitable and many landlords found it advantageous to abandon buildings that were otherwise structurally sound.

Since 1971, several major rehabilitation projects have been completed, in both upper Manhattan and the Bronx, two areas substantially built up between 1900 and 1920 under the "New Law" tenement legislation. The major impetus for undertaking these projects was an increasing awareness that the social context of housing played an important part in the success of any project. The failure of certain of the more exemplary projects of the 1960s

had brought that fact home. Renovation in these somewhat marginal areas was based on the idea of piecing back together an existing social fabric and network of community and commercial services instead of accelerating its decay through slum clearance and relocation. In addition, HUD had developed an experimental program, Project Rehab, which was intended to cut through much of the usual bureaucratic process, provide rent subsidies, and lower mortgage interest rates, along with certain tax incentives to assure the banking community that its investments in these projects were viable.

The first project to be started under this program was initiated by the Washington Heights Federal Savings and Loan, a banking institution located in the Bronx, whose concern was for the needs of the community which it served. Teaming up with the Continental Wingate Company and Graphic Construction as joint venture de-



Jose de Diego Beekamn houses in the Bronx were originally T-shaped tenement structures built under the "New Law" tenement legislation of 1901. New bridges, shaded in the plan above, connect what originally were two separate buildings so that one elevator could service both. Entrance graphics (left) give a bit of color and life to the façades which were otherwise left untouched. Courtyard (right) was opened up to serve as an entrance and play space.

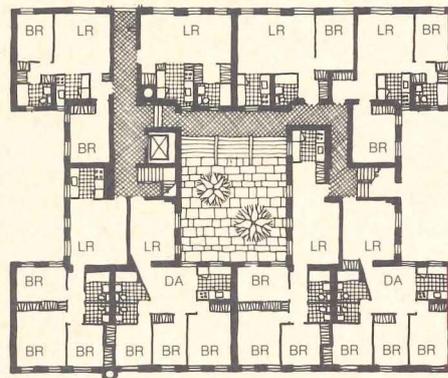
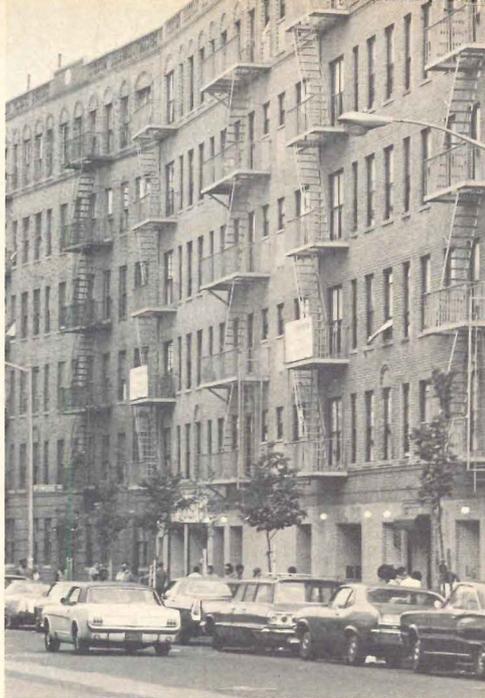


velopers with Beyer, Blinder, Belle as architects, Washington Heights Federal gave the sponsor and builder clear title to buildings containing 1000 units and provided the financing for construction.

The buildings were all structurally sound, but fires and repeated vandalism had all but destroyed the interiors. The architects' role in this type of renovation could hardly be considered glamorous; it is one that deals heavily with the more pragmatic consideration of economics. Yet, despite the inherent restrictions, the architects managed to overcome some of the problems with rather imaginative solutions. Insofar as possible or practical, buildings were grouped together and interconnected by outdoor bridges, so that one new elevator and a central boiler could service more than one building economically. Service and basement entrances, as well as fire escapes, were removed for security reasons and the interior courtyards, once mandatory for light and ventilation, were opened up to serve as controlled entrances and play yards for the group of buildings. Street-level pedestrian use, as an added security measure, was encouraged by including commercial space on the ground floors of many of these buildings. The interiors had to be completely rebuilt, with new electrical and plumbing work, new kitchens and baths, as well as an upgrading of the fire safety characteristics of public corridors. In laying out new apartments within the old shell, an effort was made to include large units with two or more bedrooms. Given the restrictions imposed by the configuration of these buildings, particularly the T-shaped tenements with their long, narrow setbacks for light and ventilation, it was nearly impossible to lay out apartments where every room had direct sunlight and an open view, but some effort was made, where possible, to give the living rooms the preferred view and locate the bedrooms away from street noise.

The exteriors of the buildings were cleaned and repaired where necessary and a new thin aluminum window unit was designed by the architects to replace the rotted wood frames. Otherwise, the exteriors are not noticeably changed. Construction was undertaken in phases, so that only minor relocation was necessary and occupancy could begin as soon as a building was finished.

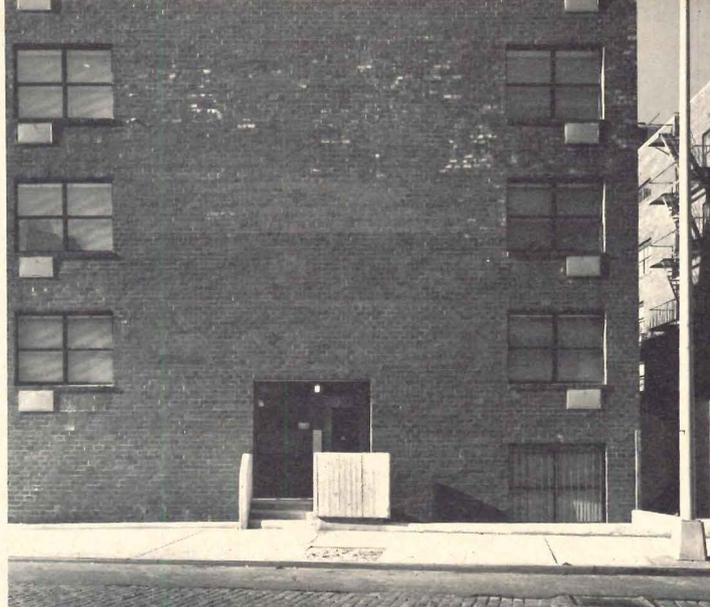
Several other projects of this type and size were done by the same architects with different sponsoring agencies and lending institutions. Crotona Park East with 200 units in the first phase, Crotona Estates with 154 units, Crotona IV with 138 units, and Boston Road with 142 units, all in the South Bronx, were sponsored by the Urban Home Ownership Corp. with the Chase Manhattan Bank providing the financing. The 96-unit Malcolm X project, sponsored and financed by the same group, is the only one completed so far in Manhattan, although applications are waiting approval on six other projects. Time will tell whether or not the fabric can be mended. [Sharon Lee Ryder]



The H-shaped plan, another type of early tenement structure, is part of the same project. Interiors (below) were new construction including kitchens, baths, electrical, and plumbing work.



# Low-rise lemon



One entrance to each building serves small number of apartments.

## A low-rise housing development for New York's West Village by Perkins & Will may have soured in the 11 years it took to build though it still bore fruit.

"The South Bronx Comes to the West Village" could be the name of the movie—at least the way the unoccupied, unlandscaped, in some cases boarded-up West Village Houses project looks right now.

The concept for the 420 co-op apartments—scattered on 3.7 acres over a seven-block stretch of the western edge of New York's Greenwich Village was inspired by quite opposite aspirations. The housing would show high-rise-happy housing experts that low-rise walk-up dwellings could be built at low cost for moderate- and middle-income New Yorkers. Furthermore, using conventional brick construction with 40-, 43-, and 65-ft frontages, the design could be built infill style in narrow unused city lots, with little bulldozing and relocation. It would ensure the retention of the existing scale and ambience of ever-scarcer old sections of New York neighborhoods.

In essence, the design was to present in tangible terms all the arguments Jane Jacobs employed to stun the planning profession in 1961 with her book *Death and Life of Great American Cities*: emphasis on street life, with shops, easy access to the ground, and an inclusion of meaningful open spaces. These, she cogently argued, would reinforce the social ties within the community and enhance the quality of life. The design by J. Raymond Matz of Perkins & Will avoided the expensive elevator cabs that restless children often demolish, the institutional corridors of double-loaded housing monoliths. In their stead were spacious walk-up floor-through apartments of one to four bedrooms (no one-room efficiencies), a few apartments to every entrance, stoops on the street, private courts at the rear.

Nice work if you can get it—and the housing's parent organization, the Committee to Save the West Village, led by Jane Jacobs, did try. But 13 years after its

birth, the project is a financial fiasco.

Its equity (down payment) costs and maintenance costs long ago catapulted its price out of reach of the moderate- and middle-income families. The Housing and Development Authority, which administers this and other city Mitchell-Lama (limited dividend) middle-income housing took the houses off the co-op market last year. They did so, they explain, because there were so few takers in the four- to six-month marketing period. A market survey commissioned by HDA revealed that few people were interested in paying the \$7000 equity and estimated \$479 per month carrying charges for a two-bedroom apartment. Those who could afford it would not want to walk up one to three and a half flights or to live in this manufacturing district.

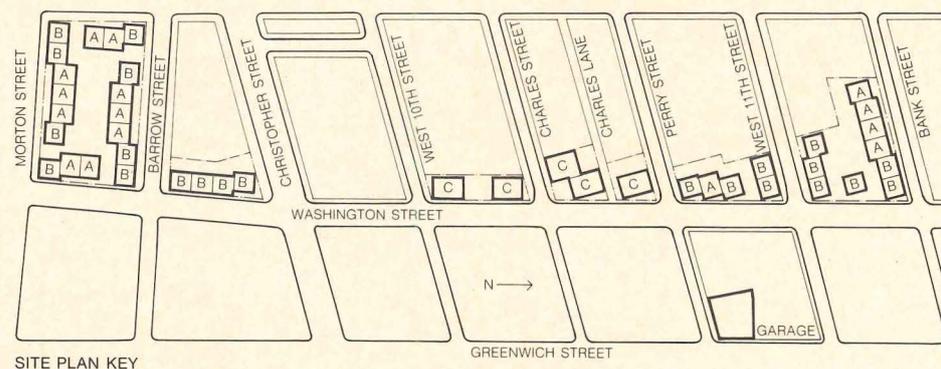
### Why so much?

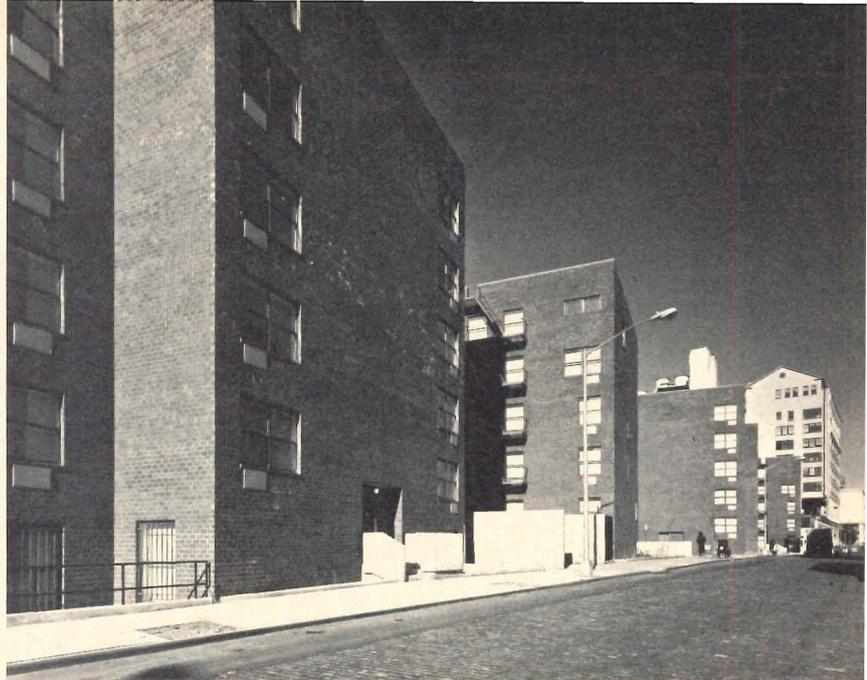
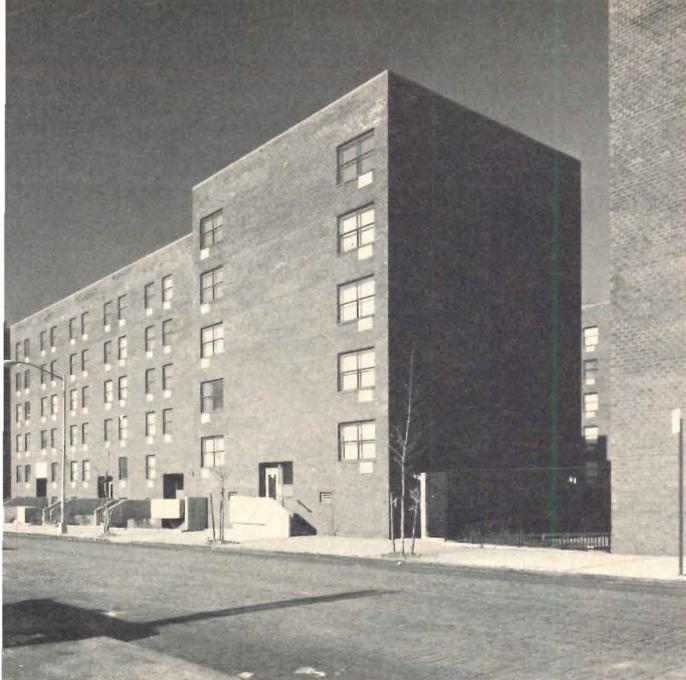
Most of the community residents, architects, and city housing officials sympathetic to the project feel that the main problem is not so much the absence of the elevators or the out-of-the-way location, but the high costs of the apartments. Total development costs originally budgeted at \$10 million (with a \$650-per-room equity and \$30-per-room carrying charge) zoomed once the apartments were under construction. Now the development approaches \$26 million, including land costs, fees, and construction. That full allotment has not been actually spent, however,

since the city ran out of money before it could landscape, finish interior lobbies, or complete the row of housing on Bank Street. (The city did spend, one HDA official commented, nearly \$100,000 on marketing and promotion.) Furthermore, an old garage purchased to satisfy city parking requirements, which have since been dropped for new housing, has to be renovated. Carrying charges cannot be precisely established until the garage work is done. A permanent certificate of occupancy awaits installation of garage elevators, delayed because of a strike.

Just recently the city instituted a foreclosure action on West Village Houses with the head of the Housing Development Administration, Roger Starr, named the receiver. If uncontested by the sponsors, the Greenwich Village Community Housing Corporation, the city will proceed to take title to the housing free of liens and encumbrances. They then plan to rent the apartments for what the market will bear or the \$75 to \$85 per room recommended by the marketing survey to recoup losses. Meanwhile the Village group has filed an "answer" contesting the foreclosure, unless some conditions regarding low rents and family emphasis can be met.

If the city does foreclose, some observers estimate it would have to absorb \$12 to \$14 million of the cost. HDA further maintains it would not seek Section 8 federal revenue-sharing funds or be able to obtain any other federal monies.





Buildings in complex have setbacks, stoops, courtyards, fire escapes, and brick walls of their older neighbors in Greenwich Village.



The urban context (above and below).



### Attitudes at odds

From a wide range of accounts, including some officials formerly with HDA, the city brought the calamitous situation down on its own head. They simply took too long to make the necessary approvals. The delay caused the project costs to almost triple during the 11 years because of mounting labor and materials prices and the high cost of land, purchased without benefit of urban renewal write-down. (The city did condemn some sites under Mitchell-Lama authorization.)

If housing had been finished and selling three years after it was proposed, the equity and carrying charges could have been low enough to save it. Of course carrying charges would have increased due to the now high cost of energy for the all-electric building (not a problem when the

## West Village Houses, New York, N.Y.

building was designed). Still, savings would have been substantial.

The delays in approvals have a lot to do with the particular time, the attitudes toward housing prevalent then, politics, and a bit of greed. Today the same events would probably not take place in such a way—even if the city could still float the bonds to finance Mitchell-Lama housing. So if there is a lesson to be learned here it only emphasizes the value of the participant equation—the government officials, the citizen sponsor, and the developer—and how that must work. The history thus becomes very revealing.

In the early 1960s the city decided that a 14-block site (24 acres) bounded by West 11th, Hudson, Christopher, Washington, Morton, and West Streets should be turned over to a middle-income urban renewal project budgeted at \$30 million. David Rose Associates, a builder, and Barry Benepe, an architect, had worked up a 1073 d.u. proposal that included three 14-story and one 21-story high-rise towers (plus low-rise units) on the urban renewal land. Unexpected opposition then mounted.

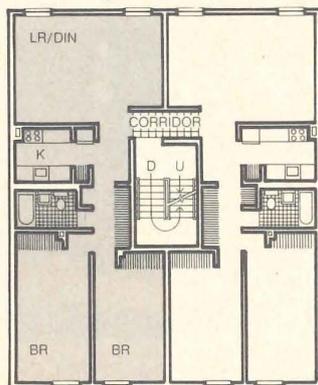
Immediately Jane Jacobs, with *Death and Life* hot off the presses, organized the Committee to Save the West Village, eager to meet the legal requirement that the city consult with residents before acting.

### City vs. citizens

The battle was bloody but the village group managed a coup. The urban renewal designation was overthrown. Then this group proceeded to come up with its own answer to urban renewal, slum clearance, and high-rise housing: in 1963 they presented a low-rise infill scheme to city officials.

The biggies in the Housing Redevelopment Board (precursor to HDA) and the City Planning Commission generally opposed the project. Head of CPC James Felt (whose firm just did the marketing study) opposed it. Even Sam Ratensky, considered HRB's "good guy" in the cause of better design, was against it. He and others claimed it wouldn't sell and that walk-up housing was essentially bringing back tenements. (Unfortunately today his prophecies turned out to be self-fulfilling but not because of the low-rise infill concept itself which proved successful elsewhere.) Architects too were divided about this kind of thinking—and still are.

Some officials resented the citizens' achievements and wanted to be proved right in the end. They dreaded seeing so much autonomy given to a community group. This victory against urban renewal forces was, it appears, the first here and perhaps anywhere. For the citizens' group to come up with its own home-grown proposal seemed anathema to profes-



Each of the building types has flipped plans. Typical floor-through shown in model apartment living

sional planners. As an example, it could only mean more headaches, more work.

This proposal was particularly besieged with paperwork. Since the housing was slated for construction on such discontinuous sites in a manufacturing area, the city could not just clear land. A whole series of real estate negotiations were necessary. They would have to change the zoning to allow residential and manufacturing uses to co-exist. Many of the design features of the housing, such as the widths between the buildings or the staggered configuration along the pavement to allow sitting spaces, violated Mitchell-Lama requirements. And there was another factor. As the Building Department and HDA hinted to the parties concerned, some bureaucrats realized that less money in the form of quiet payoffs would accrue from this bunch of earnest vigilantes.

According to the citizens' group, the HRB began to lose the site applications, then the whole file, as well as muddle cost estimates. The City Planning Commission found it unfeasible to build housing along Washington Street, a truck artery.

Not until then Mayor John V. Lindsay and his battalion of young architects and planners began to infiltrate the old guard bureaucracy in the late 1960s was the project taken seriously at all. Even in 1968 William Zeckendorf was discovered to be assembling land around and at the site for his own high-rise luxury development. At any rate the HRB, by then HDA, finally agreed to waive some of the Mitchell-Lama requirements as long as the building codes were met. The city finally began to pass the zoning changes in 1969, and gave the go-ahead in 1972.

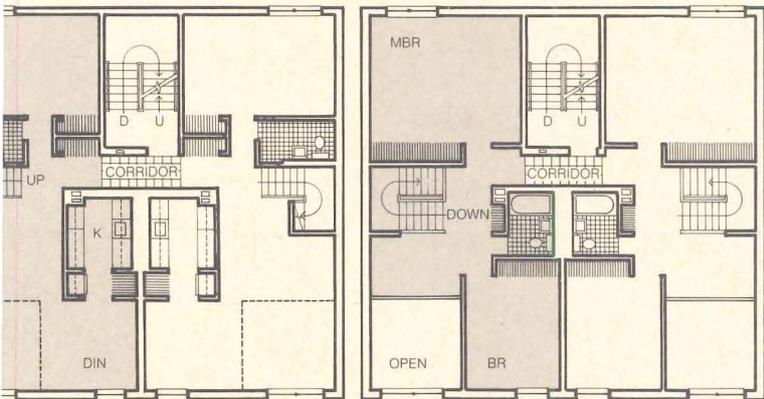
### Other factors

If one part of the equation involves the city, another important factor is the sponsor. In this instance, the Committee to Save the West Village was intelligent, extremely knowledgeable in planning and political matters, with solid leadership. However, being a voluntary organization (and one

the city was not accustomed to working with), it was bound to face drawbacks. As one official put it, there were many more meetings over things like the choice of the brick color than anyone had bargained for. Perkins & Will's architect, Raymond Matz, according to the official, had less leeway in working with the city than architects for other housing projects going through HDA at the same time, such as 1199 Plaza (p. 64). Every change required another six-week approval period with the sponsor. Because the Committee didn't have a full-time staff, it took quite a while to draw up the co-op prospectus, and find a garage.

A third component in the equation was the builder, the Graphic Construction Corp. When they couldn't get the bonding necessary, they went into joint venture with Starrett Brothers (and eventually merged). Starrett was coming in a little late to be of great help in costing out the initial design. They also insisted on a developer's fee for putting up an \$80,000 bond, but would not pay the entire 5 percent needed to meet the city's 95 percent low-interest mortgage. So HDA proposed a scheme that was satisfactory to all (except the architects): Since the project was a cooperative one, they would accept any services already provided in lieu of the 5 percent until 80 percent of the apartments had been sold. Then Perkins & Will would get their agreed upon fees of \$375,000. (They estimated value of actual time spent came closer to \$500,000.) Needless to say, the fee has not yet been paid.

With a contractor now fully involved, changes began to take place in the original scheme. Perkins & Will's design and planning concept stayed pretty much the same; just the "extras"—which can determine the way a market responds to the project—were lopped off. Out came the mansardlike roofs, or the townhouselike floor-to-ceiling sliding windows with balcony rails, because of costs and heat loss. Out went the exposed concrete floor slab alternating with brick wall. While the slab was retained between the lower level and



Duplexes occupy top floors of many buildings; they are quite spacious with three bedrooms plus mezzanine living space.

first floor so that commercial space could be provided in houses along Charles Place, for example, problems with flashing were solved by concealing it.

The builders, too, were caught in a bad period, when materials prices were escalating so much that each cost modification became itself too expensive by the next meeting. Again, timing was terrible.

Other factors helped dig the financial hole. Land costs (\$5,861,200) for many of the sites acquired on the private market, and failure to obtain a definite commitment to 236 funding for 20 percent of the apartments because of noise pollution, were both tremendous disadvantages.

### Historical perspective

Since the time of this project's proposal in 1963 many changes have taken place. The city has more or less once again embraced low-rise housing—considered outdated since the 1940s. HDA has even built low-rise housing in the Bronx and Brooklyn. The City Planning Commission now talks up citizen participation and has even implemented that with planning districts. The city does not plan to build large new housing projects for a while (if only for economic reasons). If the city spends any money it will be on rehabilitation. And Roger Starr, a bitter opponent of West Village Houses when he was director of the Citizens' Housing and Planning Council, finds himself trying to become its landlord.

West Village Houses played a historic role, for it paved the way toward current housing and urban planning thinking. Its dreary appearance—with windows of standard sizes, very plain façades, no shops, nothing to relieve the monotony of the brick, belie its significance. (Inside, of course, layouts are still spacious, top-floor duplexes with two-story living rooms, outstanding.) If it faltered along the way, the problem was less with the concept than with the not fully acknowledged gaps in client-sponsor-builder equation. But these difficulties were also due in large part to the players' being caught in a historical

moment that created irreconcilable conflicts. The West Village Houses is still a pawn in a larger game; only now economic issues have replaced housing ones. It still stands as a metaphor for unresolved housing questions that confronted us in the 1960s and continue to confront us in the 1970s. [Suzanne Stephens]

### Data

**Project:** West Village Houses, New York, N.Y.

**Architect:** The Perkins & Will Partnership, White Plains, N.Y.; J. Raymond Matz, project architect.

**Program:** to provide 420 one- to four-bedroom co-op middle-income apartments under the city Mitchell-Lama limited-dividend program. The majority, 63 percent, are two-bedroom apartments. All units, including simplexes and duplexes (21 percent) do not exceed three-and-a-half stories in height. Apartments would be floor-through, walk-up, with courtyards in the rear, with a small number of families to each building entrance. Three different types of house sizes were developed for different size lots and frontages: one 40'x50', another 43'x43', and a third 65'x47'. Project includes 9847 sq ft of commercial space, a 168-car garage a block away, and 521,442 sq ft of residential space.

**Site:** approximately seven blocks, 3.6 acres on the western edge of Greenwich Village in a manufacturing district, with 87,907 sq ft of coverage.

**Structural systems:** masonry bearing walls; wood joist floor; masonry and drywall interior partitions.

**Mechanical system:** all electric; air conditioner sleeves.

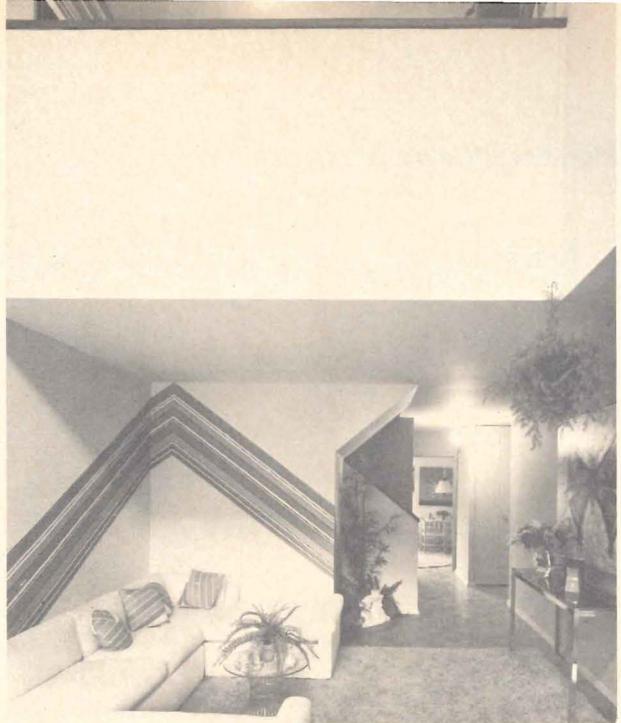
**Major materials:** face brick, 4"x8", concrete block, drywall; parquet block flooring; built-up roofing, aluminum double-hung windows, clear glass. (See Building materials, p. 98.)

**Consultants:** Kallen & Lemelson, mechanical engineers; Sol Marenberg & Associates, structural.

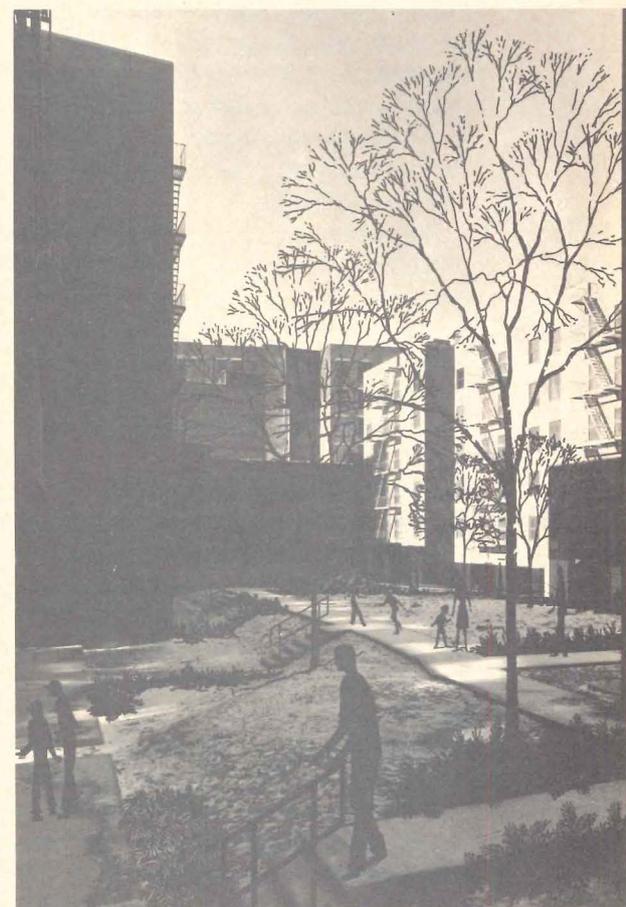
**Contractor:** Starrett-Graphic, Inc.

**Cost:** \$25 million overall land, construction, and fees; \$31 per sq ft; \$34,653 per dwelling unit, (\$56,100 including land, interests, etc.).

**Photography:** Nathaniel Lieberman.



With plants, people and shops West Village could still work, as photo-renderings show.



# Unheavenly cities?

**Can high-rise housing be rescued from its maligned status? The answer depends on whether high-rise structures can satisfy livability criteria and pose new architectural typologies within economic constraints.**

Debate has mushroomed during the last few years about the benefits one housing type—low-rise—offers over the other—high rise—in terms of amenities, security, and living standards, child supervision, etc.

Low-rise and high-rise advocates both come to the debate armed with statistics and studies. Low-risers point to the inefficiency of the net-to-gross ratio in high-rise housing owing to the space needed for corridors and elevator shafts. Elevator cabs themselves are expensive—disastrously and dangerously so when kids use them as playthings. Furthermore, low-risers argue that high densities can be achieved with low buildings spread over the site. Low-rise structures can hold 60 to 80 or more dwelling units per acre at three-fourths the costs of higher (10- to 18-story) buildings.

High-risers, however, can still point to the densities achieved by towers accommodating 400 households (1600 persons) per acre. It may not create a heavenly city, but in some situations, such density is a hard reality that has to be faced. In an area where cost of land soars over \$40 per square foot (over \$1. million an acre) nothing is going to beat a high-rise for offsetting the cost-per-unit price.

## High-rise housing and people

But can high-rise housing satisfy the *qualitative* criteria of livability as well as the quantitative ones? The answer is usually a resounding no. Yet some argue that high-rise housing can be a successful form of habitation if several factors revolving around design and tenant composition are considered. For example, the number of children in the project is critical and the balance between their numbers and adults must be maintained for ease of supervision. The down-and-out poor should be balanced with a large number of stable households for obvious reasons.

In terms of design, amenities and services need to be located in such a way that they encourage interaction but not offensively so. Thus, teenagers should have their own gath-

ering places in a location where adults can be aware of what is going on, but do not have to be an unwilling audience for music, etc. Large families should be located nearest playgrounds. Laundry rooms should be placed where they can offer natural light, view, and access to play areas for kids. The list can easily go on. The problem is that few architects or government agencies push hard enough for considerations that determine the project's success.

Security is perhaps the hardest to achieve in high-rise housing, yet in *Defensible Space* Oscar Newman conceded that high-rise housing could be as secure as low-rise. The short corridors, populated and visible lobbies, well-defined hierarchies of public, semi-public, semi-private and private open spaces that Newman advocates can be applied to high-rise design—but will add to its cost.

Low-risers argue that high densities found in high-rise housing foster social pathologies. Social scientists now question this previous assumption, noting that overcrowding is one thing; high density another. Housing studies show a negative association between density, size of the environment, and behavior within it. But it appears coincidental—due to other social factors that make density difficult to deal with for its users. For example, users' expectations and culture affect their response to crowding, as do social situations and architectural design. Some specific findings support the implication that the most important component of density is persons per room. The number of units per building is much less important, although more significant, than rooms/dwelling unit and buildings/acre.

## Housing without architecture

Added to the question of whether housing and high-rises go together is the third ingredient: "architecture." Many housing experts (and some architects) think that housing and architecture don't mix. Or that housing is a matter of solving livability and economic issues and little else. Several years ago it appeared as if solving the nation's housing needs depended solely on user participation and economical industrialized building techniques. "Architecture" would automatically follow. Yet many built schemes often lacked scale, massing, plane and texture, modulation of space—perceptual qualities that are going to make the built environment a little more enjoyable to inhabit. It is through



Towers merge into wall: Ruppert Tower and Knickerbocker Plaza

Nathaniel Lieberman

these extras that housing receives its meaning, character, surprise, and delight. Nineteenth century virtues may become tomorrow's values.

Residents themselves, perhaps, are becoming more conscious of their "poetic," rather than strictly "pragmatic," needs. In fact, Waterside apartments in New York, Davis, Brody & Associates' moderate- and middle-income Mitchell-Lama high-rise complex, is one of the rare examples where tenants have cited the architecture (along with the view) as a main reason for moving there.

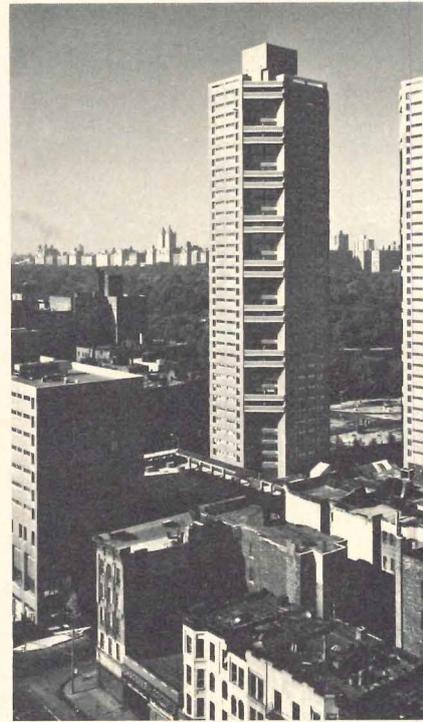
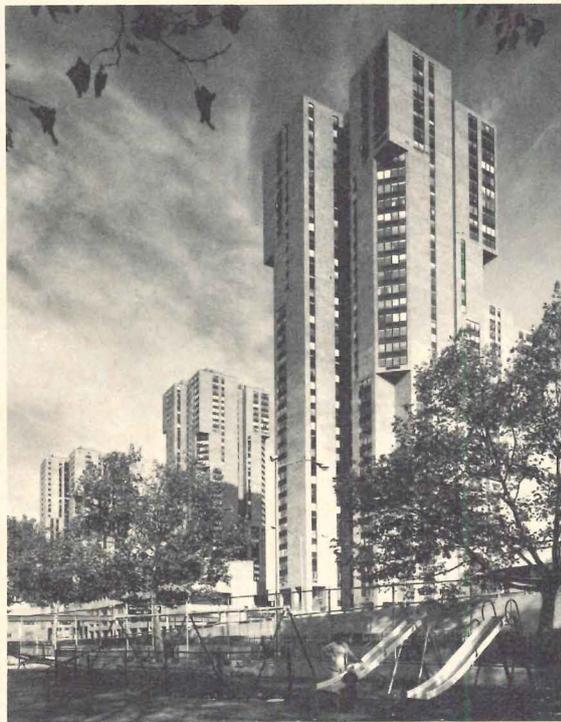
If this country's attitudes toward architecture and housing are imperfectly formed, part of the problem lies in the historical position toward housing as a public, not to mention professional, concern. Since the Housing Act of 1937, federal and municipal governments have faced the fact that most of America's low rental housing needs will not be met by the private sector: The private sector does not satisfy housing requirements of more than 30 percent of the people in this country.

The situation has become more extreme in recent years, as architects are well aware. Mounting costs of labor, mate-

rials, land, and money exacerbate the problem of governmental ambivalence regarding new construction. "There is no real housing policy," housing experts pointed out at a recent National Association of Housing and Redevelopment Officials' conference. The problem, panelists observed, is that there is no real constituency to push for an allocation of capital resources in this area. "Housing as an issue does not excite people."

Architects themselves have not been much more enthusiastic than the public. Design compromises come *a priori* to this building type. True, talented architects have tried to rectify the situation in recent years, under city and state publicly assisted housing programs. Nevertheless, tales of torment regarding compromises demanded in the builder-agency-architect relationship still reverberate. And of course, the economic picture doesn't help. (For more details regarding public policy and economics see p. 24.)

When it comes to high-rise architecture in particular, history reveals a design locked into a limited set of configurations. The tower in the park after being duplicated over and over gave way to the tower on a podium—with parking and



Varying tower treatments: Chatham Towers, Waterside, Schomburg Plaza

services under a deck. Then, for variety, there was the tower with low-rise units edging the park; or the tower with low-rise units edging the podium. Sert, Jackson & Gourley's Peabody Terrace (P/A, Oct. 1974, p. 72) in Cambridge illustrates that good proportions between low- and high-rise units, site planning, and the articulation of the façade are crucial in bringing off the combination effectively.

Architects have tried to do a lot with the actual tower design itself, as shown by Bertrand Goldberg's circular forms at Marina City in Chicago, Kelly & Gruzen's articulated cubic concrete masses in Chatham Towers in New York, or Schipporeit-Heinrich Associates' cloverleaf-shaped Lake Point Tower in Chicago. At Waterside, Davis, Brody took the rectangular shaft, cantilevered the uppermost corners, chamfered the ones under it and made the lower corners re-entrant. The result is a break-up of the massing, which expresses the location of larger apartments (at the top) and gives the tower an identity in its landscape. At Gruzen & Partners' low- and moderate-income Schomburg Plaza apartments in Harlem, the towers are octagonal. The solution reduces the net-to-gross, allows expansive views and light to the apartments and offers layouts more reasonably shaped than a round tower. Yet the octagonal tower neither fades into the background nor is fully dramatic enough in its detailing or massing to live up to its center-stage position at the top of Central Park.

If high-rises are going to blend at all with the existing scale, texture, and character of various kinds of neighborhoods, a form and massing will have to be developed to merge with the surround rather than maintain such a discreet (and discrete) distance. For example, 1199 Plaza (p. 64) satisfies many livability criteria as well as combines an intriguing articulated tower and stepped-U configuration. Horowitz & Chun's Confucius Plaza and Davis, Brody's Ruppert Brewery housing both experiment rather curiously with towers that have merged into "wall" buildings, although both attain a scale that does not blend at all with their immediate low-scale environments. Despite the flaws

in their early applications, the wall buildings and the stepped buildings might offer some truly interesting configurations for future elaboration. As typologies they can provide various kinds of scales, dwelling unit options, and hierarchies of open space. There is a possibility here for connections to the street grid and relation to the surrounding physical milieu.

Besides the formal considerations to observe, there are, of course, the technical ones. As housing production has faltered, the reliance on economical conventional construction has increased. Not surprisingly, brick facing over concrete flat plate and column construction has become the 1970s answer to industrialized building. But brick in housing is improving with greater choices among mute tones and sizes such as 8" x 8" or 4" x 8". Fortunately, industrialized building systems haven't completely left the picture. Stull Associates' Rutland Road housing (p. 70) in Brooklyn employs the Blakeslee precast panel system in a stunningly effective solution. Other firms like Gruzen & Partners have taken advantage of industrialization of particular methods. Their use of the "flying form" poured concrete technique at Genesee Gateway housing in Rochester, New York and other places has set a nice example.

The question still haunts us however: Can housing be high-rise and can it be architecture? It depends. High-rise housing calls for more effort and thought to make it work in terms of quality of life. It requires more experimentation to find the form that will satisfy tenants' psychological needs (pragmatic and poetic) and fit into the existing landscape. And high-rise housing demands continued application of labor-saving cost-cutting construction methods to make it more economical. But what all housing, high-rise included, needs is a conviction on the part of the public, professionals, and policy-makers in government that housing *is* worth the time and money. Rehabilitation of old housing and rent supplement programs cannot physically solve the urgent need for housing. We must have new construction. Let's do it right. [Suzanne Stephens]

High-rise housing, New York, N.Y.

# The last gasp: New York City

**Where housing problems begin but don't end. Heartland of America, this could be your future—if housing has a future.**

A lot of high-rise housing has appeared on the New York scene, at a time when housing construction seems to have a bleak future. Confronted with this paradox, P/A has decided to present some of the examples of high-rise housing that seem to reflect, exemplify, or consolidate the high-rise housing issues right now. Economics, livability, architectural form, and technique are all factors that have been addressed in one way or another here. What these cases make most apparent is that housing, designed in one period, under one set of expectations and assumptions, and finished years later, means trouble. The economy and rental markets prove too tickle. Worse yet, decisions based on related actions will further aggravate the effect of those hidden hurdles.

## Manhattan Plaza

### Which income group gets the high-rise.

This tower-on-a-podium solution was originally aimed at a very different kind of clientele than the ones who may inherit it, literally by default. Initially Manhattan Plaza, located on 42 St between Ninth and Tenth Aves, was conceived to attract the young executive set from the East Side. As office buildings went up in Times Square, housing to satisfy the walk-to-work types would no doubt find a good market. It would also give the western fringe of New York's porn belt an infusion of class.

Thus, developer Richard Ravitch of the HRH Construction Company and architect David Todd envisioned two 45-story towers to contain 1690 apartments on 3.6 acres. With a density of 3200 residents it would generate a lot of middle-income revenue for the developer and the neighborhood. As additional marketing attractions, HRH included an array of recreational and health facilities that would make California condominiums look sick: a skylit swimming pool, five tennis courts, two handball

courts, basketball and ice skating area, exercise rooms, saunas, game rooms, snack bar, plus a garage and shops, all contained within the two-story-high podium. In addition, the apartments were designed with 20 percent more space than standard Mitchell-Lama requirements. The apartments are all efficiency and one-bedroom with the exception of 266 two-bedroom apartments.

The Clinton community, to the immediate north, at first objected to the project. The neighborhood, composed of stable working-class Irish, Puerto Rican, and Italian families lived in low-scale brownstones and tenements. They feared that a project with this kind of density would drive up land speculation, as well as cast shadows over entire blocks. Therefore, David Todd chose the tower-and-podium solution to get the density desired and concentrate dwelling units into two narrow towers connected by the deck. On the 43 St. side facing the Clinton brownstones, he situated shops at street level and townhouses above. Next the city designated the Clinton community a special preservation district, so that higher allowable densities on its edges would not affect the low-scale nature of the neighborhood.

Unfortunately, Manhattan Plaza got caught in a cost squeeze. Its room rents weren't expected to go much above \$100 per room. Now it looks like rents on the Mitchell-Lama middle-income market would have to go for \$150 to \$175 per room. The administering agency, the Housing and Development Administration, sponsored a marketing study revealing (not too surprisingly) that prospective tenants were not willing to pay those rents in that part of town—no matter how many tennis courts were available. The fact that New York's convention center location—from 44 to 47 Sts on the Hudson River—is now in doubt hasn't helped the prospects for the additional influx of capital.

Parts of the problem were labor, inflation, zooming interest rates, and the pre-energy-crisis decision to have an all-electric building with central air conditioning. Even land cost too much—about \$80/sq ft.



Manhattan Plaza

Furthermore, the city financed the mortgage with short-term notes. As they kept rolling over, the cost of credit kept mounting. So now the city has no Mitchell-Lama money to finish Manhattan Plaza and seven other projects. Unless it can convince the state legislature to approve a plan that would allow private investors to come in on the first mortgages, the construction on the 80-percent-completed project will come to a halt. Even if such legislation is passed, the city has no guarantee a private bank or investor will bite.

At the same time this legislation is being pushed, and Mitchell-Lama is being phased out, the HDA has applied for Section 8 funding to receive rental subsidies for the project totaling \$11.5 million. The only hitch is that it would mean converting the project to low-income occupancy. Besides that, it would use up the city's allocation of Section 8 money.

This plan, still up in the air, presents several programmatic snags. The project clearly has not been designed for poorer people with large families. Secondly, the Clinton community, that had objected to a higher income development, opposes low-income residents also. The large number of poor families would put a tremendous strain on this stable neighborhood. Some of Clinton's own residents might go to live there, further aggravating the turnover in Clinton's older houses.

For their part, the Times Square businessmen, intent on cleaning up the area, see a low-income project as perpetuating the social ills for which Times Square is too notorious now. Therefore, it is being suggested that the "low-income" tenants come from the ranks of out-of-work actors and elderly occupants of some of the less desirable Times Square hotels. Group Health Insurance Co. which is taking over the empty McGraw-Hill Building a block away may take an option on some of the apartments. All of these tenant selection plans raise legal questions. Also, Section 8 funding would require public hearings, and environmental impact statement, and so on. Whatever is done may not happen that quickly or easily.

## Taino Towers

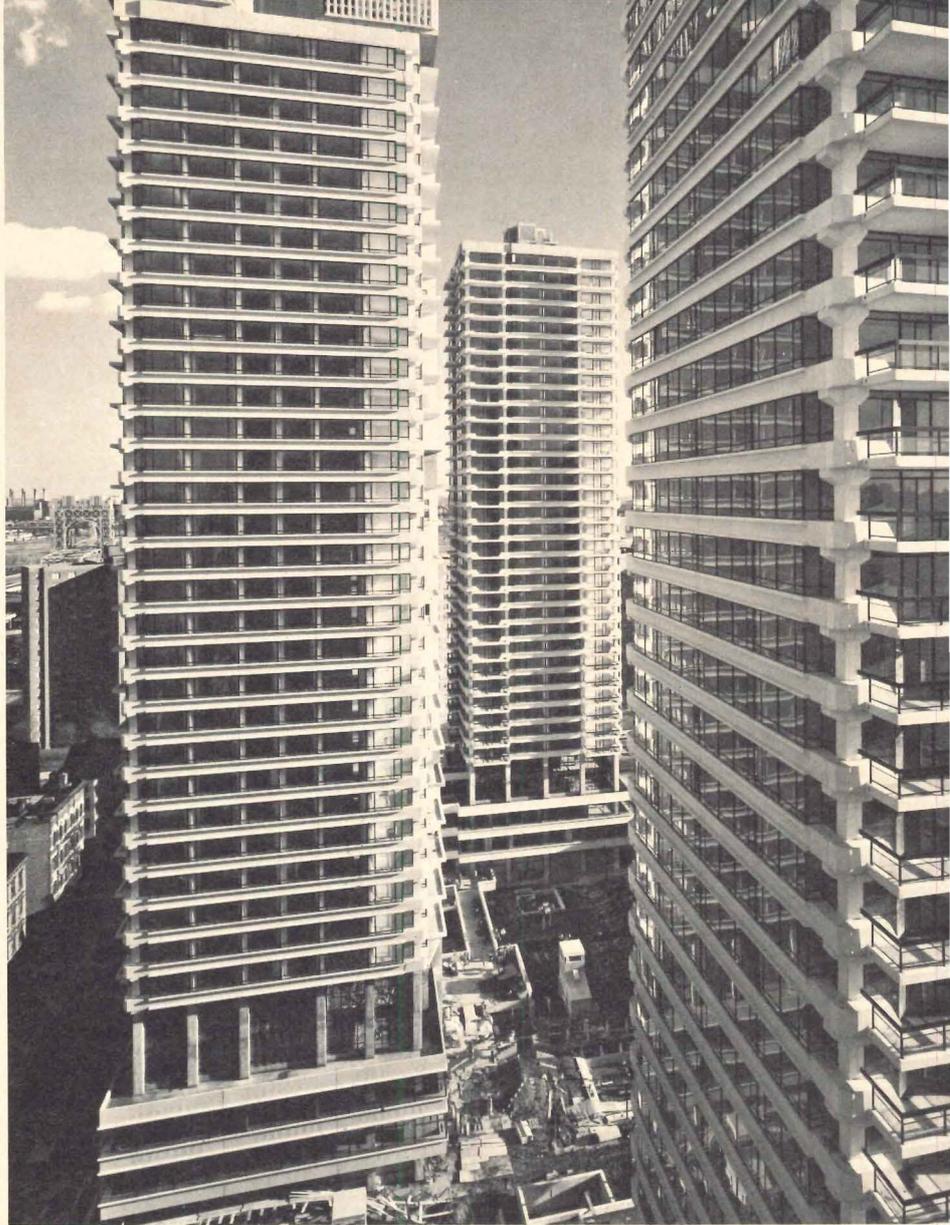
**The undeserving poor.** Harlem's Taino Towers project has managed to generate a very interesting public—and professional—response as it nears completion. The reaction points out attitudinal difficulties that usually don't present themselves with regard to publicly assisted housing: Many observers consider the housing too good for the poor people who will live there.

The four 35-story buildings contain a total of 656 units for 3000 people on a three-acre block at 122 St. and Third Ave. in Spanish Harlem. The glass-wrapped, pre-cast and poured-in-place concrete towers sit on a six-level base. Only four apartments per floor are allocated to one tower; two towers have six apartments per floor; and a third is designed to contain duplexes. Here, the architects devised a split-level parti: four bedroom floors are slid against three living room floors so that every third floor contains duplexes with six bedrooms and 11-ft-high living rooms. Most of the apartments have balconies and air conditioning. On top of that, the first six floors of the development (265,000 sq ft) are devoted to a vast array of community services including a day care center, a health clinic, and a human resources complex for job training, geriatric, and social service programs. Other facilities include a theater, auditorium, meeting rooms, swimming pool, teenagers' social center, gym, arts workshops, labs, and a greenhouse exhibit space. Even a 240-car garage is included. The commercial space rentals plus rent supplements are expected to keep the apartment rentals low—although rentals are not yet fixed.

The architects placed laundries on the roof near outdoor play areas and designed several plazas and play yards on the podium's roof deck. In addition, they installed the first fully automated vacuum garbage disposal system in the city, which they contend will save the city \$50,000 per year in normal pickups.

Bringing this undertaking off required a lot of chutzpah and persistence on the part of the architects and sponsoring group. Silverman & Cika got involved as the Taino Towers architects following a series of articles in the *New York Post* in 1965 describing the deplorable slum conditions in the area. They talked to the East Harlem Tenants' Committee about working on a pilot project. From the start, the community group firmly maintained that the health, educational, and welfare program for the neighborhood would have to be fully integrated with the housing.

After the architects had a guaranteed price from the contractor, S.S. Silberblatt, they sought financing, but couldn't convince city and state agencies to back the housing. Finally, the community group formed a nonprofit company to own the project with an FHA guaranteed mortgage. (This project will be the first in the city to be tenant-owned and run.) The city con-



Taino Towers

Nathaniel Lieberman

demned some land so they could have a site, and gave some tax abatements. A consortium of banks lent \$39 million to the owners, with all but a small part guaranteed by FHA. In addition, HUD gave an interest subsidy to reduce the 7 percent interest to 2 percent, and a rent subsidy for 40 percent of the apartments. The project got an additional \$6 million in city and federal aid including Model Cities money for fees and administrative costs.

Still, nonresidential rents will have to bring in an estimated \$1 million or more a year if apartment rentals are going to stay down. So far, the Board of Education and the Health Insurance plan have decided not to rent space as originally intended. New York's day care center program has been cut back, and could easily affect Taino Towers' day care operations.

Meanwhile, a tremendous flap has developed over the federal commitment to the project. The amount of nonresidential space included in the project raises its total costs considerably. Sagging rentals for this portion could hinder the company's ability to meet mortgage payments. The *New York Times* reported that the project may be "regarded as a monument to gov-

ernment compassion or an epitaph on bureaucratic folly." The article also charged that the average construction cost per apartment is \$68,597, quite high for low-income housing. The architects, in turn, report that that figure is incorrect, that the *Times* included more than straight construction costs per d.u. In actuality, Silverman & Cika contend, the apartments average \$35,433 in construction costs. The separate costs of the community facilities represent 48 percent of the project's costs—and as the owners hope, 48 percent of its income. Since the community facilities will serve the entire neighborhood, the architects see no reason that the costs should be charged against the apartments, any more than the Educational Construction Fund school costs are charged against their apartments.

Timing has gotten Taino Towers in its biggest bind—especially now, when government agencies are having trouble meeting operating costs, and hesitate to expand into new rental spaces. The recent economic shifts are particularly unfortunate because this extensive range of community services represents everything that 1960s liberals called for. The premise

should still hold true: housing by itself cannot cure social ills—it must be tied into an extensive program of health, educational, and social services before it can begin to have impact. The community program could provide an important laboratory for this severely decayed neighborhood.

Detractors of Taino Towers' lavish apartments forget several things (besides the rundown neighborhood). The dwelling units themselves are small—even the duplexes contain little residual space. Bedrooms are usually about 130 to 140 sq ft; and 221 sq ft for master bedrooms. The extensive use of glass—a decision made before the energy crisis—may be as wasteful as the balconies, but both at least increase the sense of space.

By using channel-shaped precast spandrel beams underneath the glazing, the architects could build an air conditioning plenum into the walls, thereby eliminating the need for 40 percent of the ducts. While the actual concrete spandrel bracket and corner elements fit together in a klutziy manneristic way, the entire assemblage comes off rather elegantly. If it borders on Miami Modern perhaps that was the point. That style, usually reserved for luxury condominiums contains a particular meaning or association. It has become a significant form for large segments of the American public. This is what this community wanted and what they got.

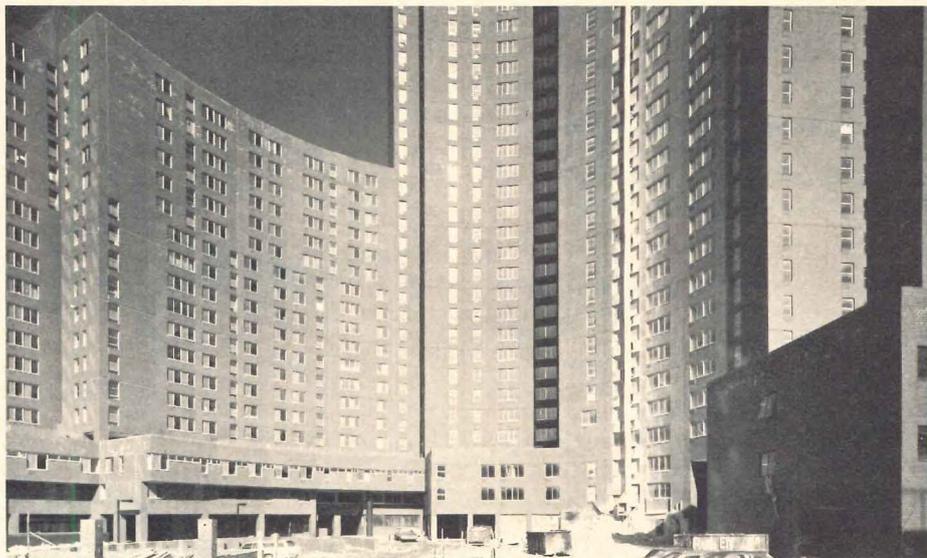
It may be the last time the government is so generous, unfortunately. Because of ingrained attitudes, efforts like this will be too piecemeal and too accidental to serve as much more than surprising historical examples of public munificence.

## Confucius Plaza

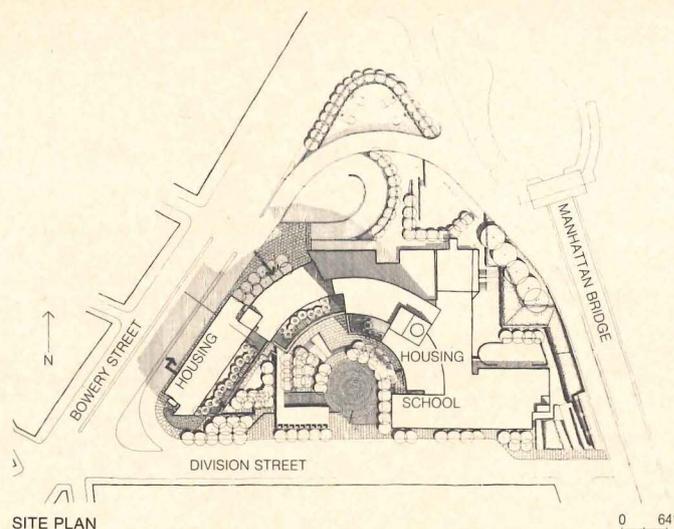
**Curved wall configuration.** One of the city's most unusually shaped buildings is nearing completion in Chinatown. The Chinese community needed moderate-income housing for their dense low-scale community, but land was scarce. However the Educational Construction Fund permitted the leasing of air rights over the school they were building to a community sponsor. The only trouble was the site itself: a triangular piece, 6.5 acres, between the Bowery and the Manhattan Bridge, of which the apex had been lopped off by bridge approaches. Despite the strange disfiguration, the land was still selling for \$45 a sq ft.

Horowitz & Chun were hired to design the 762 Mitchell-Lama cooperative apartments (with 236 subsidies) plus the 1200-student school, 55,000 sq ft of shops and community spaces, a 7500-sq-ft day care center and a garage for 230 cars. They decided on a south-oriented semicircular stepped-wall building. Three sections compose the basic form of the housing. The one at the periphery of the site is a straight rectangular block; the other two are curved wings. All three portions are offset from each other in a staggered plan formation. Though a double-loaded corridor connects them, it is broken up into small segments that receive natural light

Confucius Plaza



Nathaniel Lieberman



and ample views from hall windows.

The building reaches a 44-story height, then steps down to 19, and finally 3 stories, for the duplex apartments and community facilities fronting the plaza. A setback on top of the 3-story portion provides a rooftop deck for residents separate from the public plaza. Horowitz & Chun located laundry rooms next to the roof deck so that sun, view, and access to the outdoors is immediately available to tenants with children as they use the laundry facilities.

Other considerations determined the crescent wall configuration besides site and sun orientation. Henry Horowitz reasons that a building of such overwhelming size and height will diminish in bulk as one approaches it from the north (up the Bowery) and moves around the thin edge of the crescent to the large plaza. Visually, it should present a strong statement to Chinatown, at the same time buffering the Chinatown residents from the tangle of roads leading to the bridge. (The view, however, now belongs to the residents of the north face of the building.)

Inspired by Aalto's Baker Dorms at MIT, the architects found the concept not all that easy to apply to the multiple-dwelling high-density building. Especially since theirs was to be a double-loaded corridor system, whereas Baker is single-loaded. Getting the rectilinear concrete column and flat plate grid to work required calcu-

lations by computer. Placing conduits in the basement to align with the partitions above meant further calculations. As it is, few right angles can be found in the apartments. Most of the apartments have a lot of residual spaces left here and there that make the layouts more unusual (if not quirky) than the normal.

The design, according to the architects, did not add to the cost of construction (\$40,000 per dwelling unit) but did require a sacrifice in fees for time spent on technical computation. The question is, was it worth it? In some ways yes, and in some, no. The orientation of the curved wall permits extraordinary light and views to the apartments within (even on the north), and nicely solves the problem of enclosing the south-facing plaza. As far as diminishing the bulk however, frankly it does not. The curved wall concept is an interesting one, but in this case the size and bulk of the building is almost overwhelming in view of the low-scale neighborhood. (Asked casually about this aspect, several tenants of Confucius Plaza reported *they* didn't perceive it to be large.) The facing was intended to be 8" x 8" brick, but the builder-contractor DeMatteis Corporation, ruled it out as too difficult. A 4" x 8" brick was chosen instead. The larger jumbo brick would clearly have been a more effective means of breaking down scale in the high-rise building. [Suzanne Stephens]

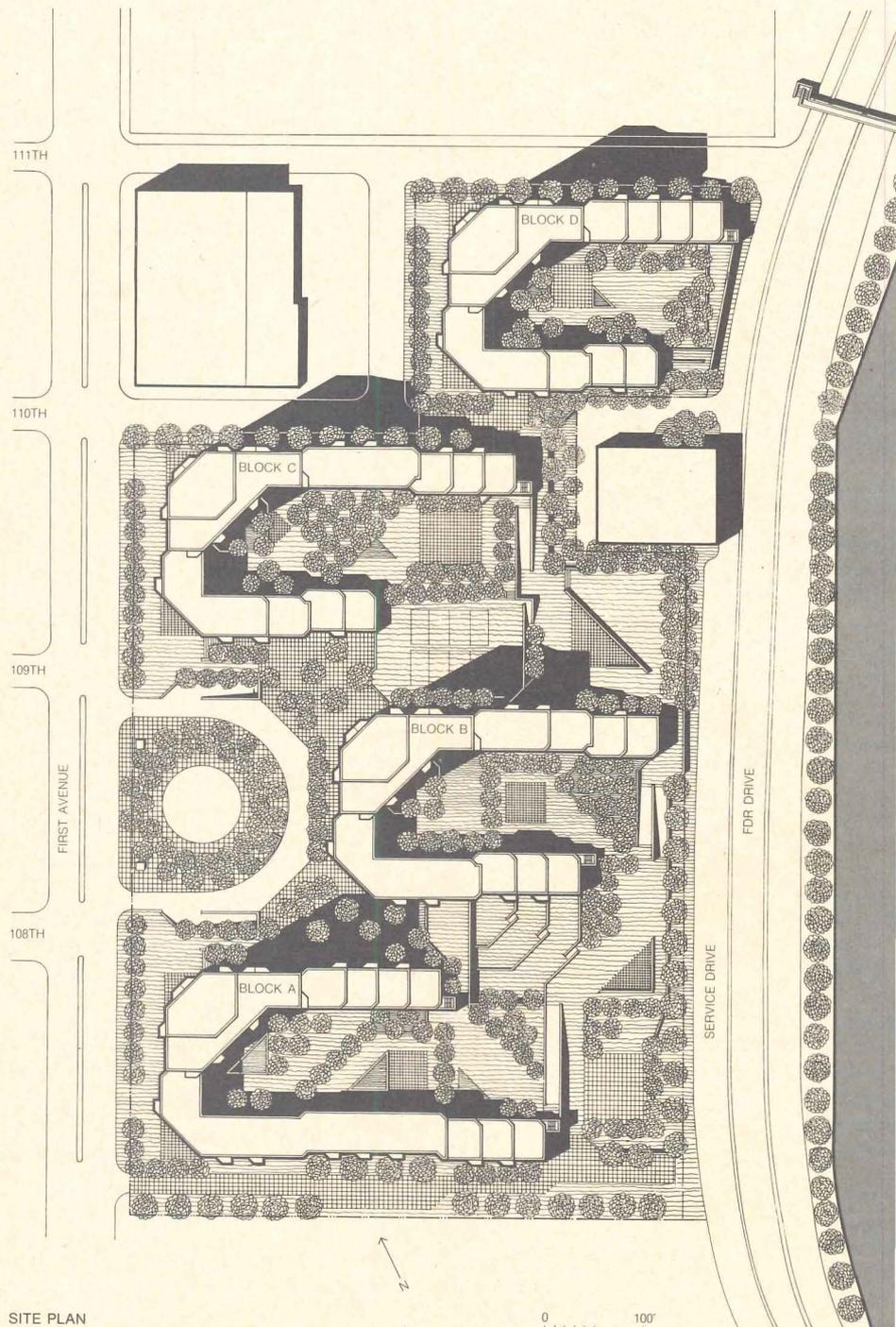
# High-rise in Harlem

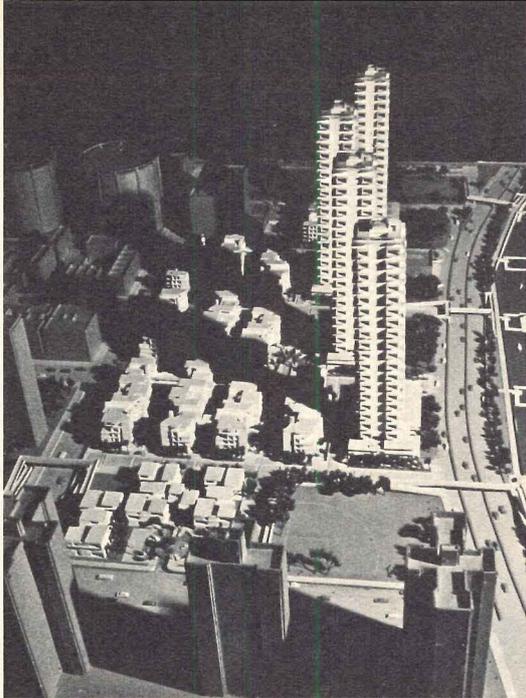
**New housing by Hodne/Stageberg is a bold response to questions of livability and architectural form in a high-density urban situation.**

A moderate- and middle-income cooperative housing development in New York City's East Harlem shows it can be done. Housing can respond dramatically and comprehensively to the need to accommodate a high density of residents (450 people per acre) in a decently designed humane setting. 1199 Plaza combines low-rise and high-rise apartments in a tower and stepped-U configuration that affords various options in living units to its residents while making an architecturally smooth transition between the two types.

The 32-story towers of flats are attached to the ten-, eight-, and six-story stepped wings of duplex units in such a way that a clear and definite separation of public and private open spaces emerges: At the entrance on First Avenue four towers embrace a public plaza lined with shops; at the rear the U-shaped wings enclose courtyards accessible only to those living in the complex. Semi-private outdoor galleries link the entrances of duplexes that overlook the courts. At the stepped-back ends of the low-rise portions, small terraces are formed to serve tenants on each mid-air street. In addition, 55 percent of the 1600 apartments come with balconies, in an arrangement that amplifies the waterfront views available to this East River location. (The major drawback, the FDR Drive separating 1199 from the water, has not been circumvented however. That would have required a commitment the city was not able to make.)

Architectural articulation is given the façades by alternately pulling out and recessing those balconies. The architects also vary the oversize brown brick surfaces to permit an easier identification of the separate apartments from the street. They staggered the towers in plan on the site to augment views and light for the apartments and aid in differentiation between towers.





Model shot of original competition entry.



View from First Avenue (above), East River (below).



## 1199 Plaza

### Cross-fertilization

Ironically the project was designed by an architectural firm from Minneapolis, at a time when New York's own talented architects were running off to Minneapolis to grace that city with cultural and commercial centers. The Hodne/Stageberg Partners, winners of a competition sponsored by the Ruberoid Company in 1963, then proceeded to execute one of New York's most outstanding housing developments. Another incongruity is that the scheme with which the firm (then Thomas Hodne Associates) won the competition is not the one that got built.

But first a word about the competition: Ruberoid's sponsorship of the competition on this 12-acre site between 107th and 111th Streets and the East River Drive was the first time the city resorted to such elaborate means to ensure good design for its publicly assisted housing. Fortunately, Ruberoid picked up the competition tab for the Housing Redevelopment Board, an agency since absorbed into the Housing Development Administration. The site selected seemed almost ideal: Only 96 families had to be relocated, but two industrial buildings, one belonging to the sanitation department, had to remain.

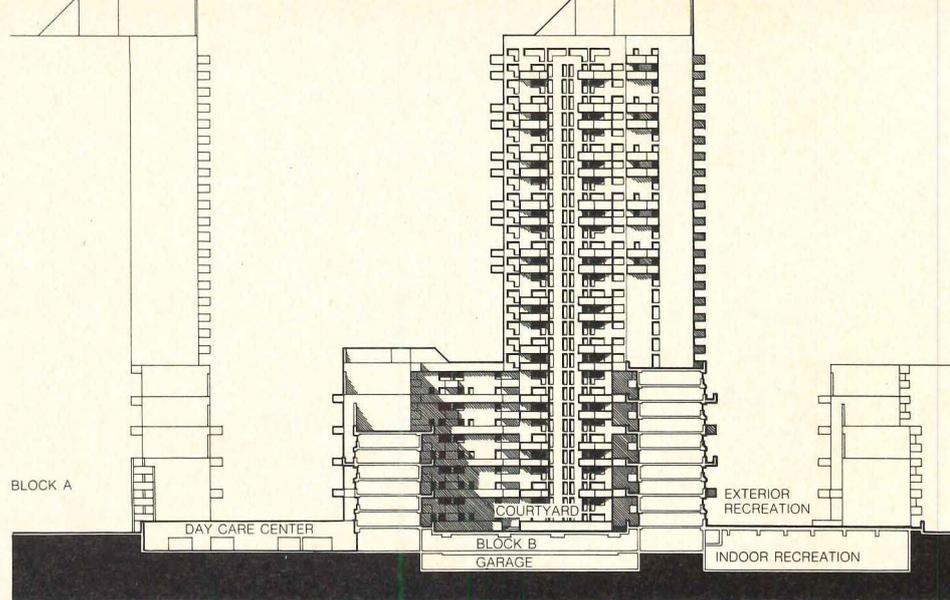
The jury (Albert Mayer, David Crane, Harry Weese, Sir Leslie Martin, Herbert Gans, B. Sumner Gruzen, Lewis Kitchen, and Milton Mollen of HRB) was justifiably attracted to the original submission. It was a very *au courant* response to the theories contained in the just-published *Death and Life of Great American Cities* by Jane Jacobs. The project proposed numerous five- and six-story buildings to edge First Avenue, with small shop-lined pedestrian streets extending the city's own grid right into the project. The concept was exceptional in the way it allowed the complex to remain integrated with the surrounding low-scale neighborhood, while generating cul-de-sacs and plazas where people could walk, sit, chat, and socialize.

While this low-rise portion retained the prevailing urban scale and street connections, four 20-story shaftlike towers were placed along the water's edge to make up for the needed density of 125 units per acre. The towers clearly would not have provided the most imaginative solution to the change in scale between the two housing types, nor to the relationship of the complex to the riverside.

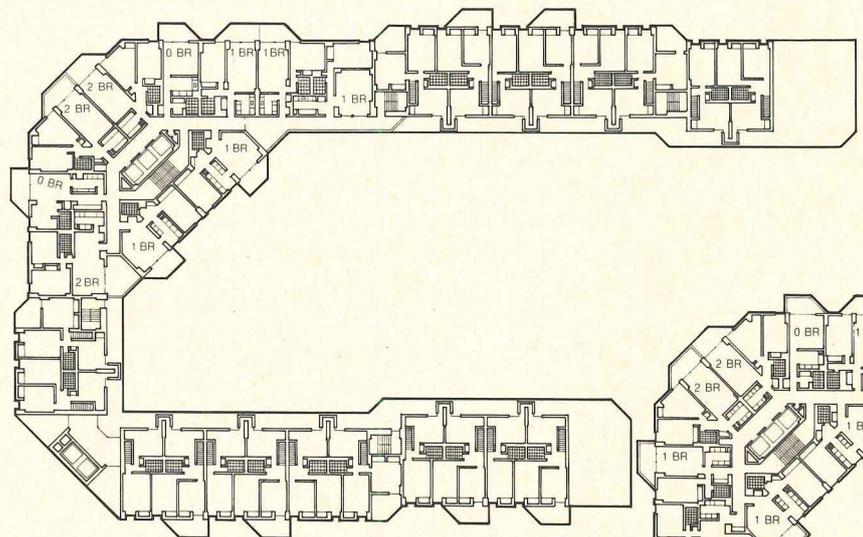
### Community speaks

Yet the telling criticism of the winning scheme came in 1968 when the city finally found a sponsor for the housing, Local 1199 of the Drug and Hospital Worker's Union. With the sponsor the city could now provide a 95 percent Mitchell-Lama mortgage with low interest and tax abatements for the middle-income cooperative apartments. In addition it received federal 236 funding for the moderate-income units.

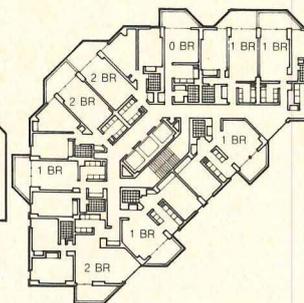
But the board of union members and



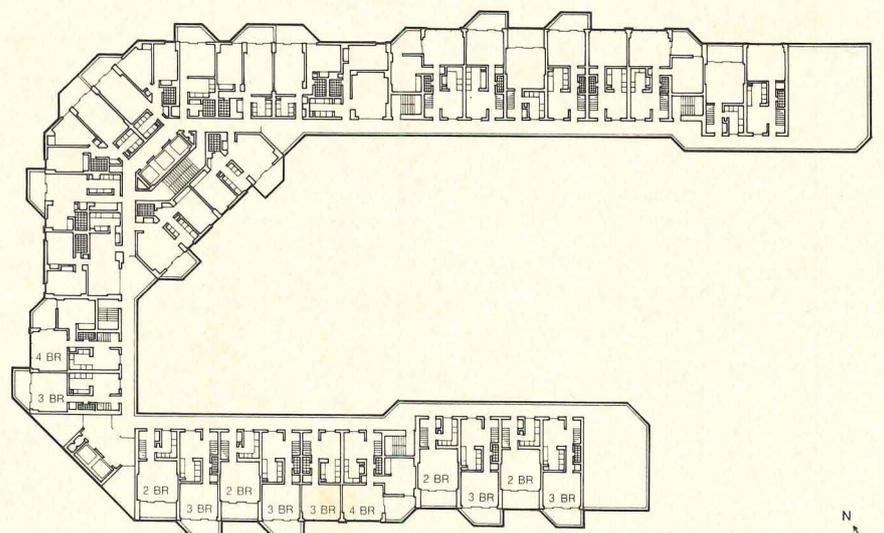
SECTION/ELEVATION BLOCK B



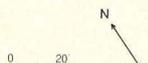
7TH FLOOR PLAN BLOCK B



15TH FLOOR PLAN



6TH FLOOR PLAN BLOCK B





Typical apartment interior for tower with balcony, above left and right.



Public plaza on First Avenue, (below).

community representatives wasn't as wild about the winning scheme as the jury had been. First they objected to the low-rise structures tying in so well with the existing streets. They desired security most of all, with restricted points of access to the housing: something that the penetration of the street grid wouldn't accomplish. Furthermore, they voiced a desire for ample natural sunlight, a rare commodity in New York, especially for those used to dark tenements. Related to this preference was the wish for image and identifiability, a visible affirmation of the community's sense of pride and upwardly mobile aspirations. High-rise housing was more clearly and positively associated in their minds with luxury apartment buildings in the rest of Manhattan. The sponsors wisely scrutinized the most mundane details—including placement of usually forgotten laundry rooms. They urged that laundry rooms be placed on the street level with glazed walls separating them and the corridor for easy surveillance and added outdoor contact.

### The solution evolves

Working with models, Hodne/Stageberg eventually arrived at the stepped tower solution. Pulling the towers over to First Avenue provided the greatest number of apartments with views of the water; the irregular formation admits a maximum sunlight into the apartments. Although one isn't aware enough of the stepped low-rise configuration when viewing the complex from First Avenue, from within 1199 (and from the East River Drive) its intriguing parti is easily perceived. Within the complex, focus is constantly toward the well-used U-shaped semi-public courts. On a warm afternoon kids will be skipping rope or playing on jungle gyms, adults and teenagers chatting on the galleries or calling to each other across the court.

The East Harlem residents seem to have responded enthusiastically to the housing. All four buildings are occupied and over 85 percent of the co-ops have been sold, with most of the ground-level shops rented. Financial problems of course won't be totally resolved, until all co-ops are taken.



**High-rise vs. low-rise**

It is interesting to note that both 1199 Plaza (p. 64) and West Village Houses (p. 54) were conceived in the same year, 1963, finished in 1974, and both began to move through HDA at the same time. Both were even built by the same firm—Starrett Brothers. Today 1199 is “successful” while the other is clearly in trouble. The reasons have more to do with their different situations than with the type of housing itself (low-rise versus high-rise).

Several factors have to be considered in comparing the two: 1199 Plaza actually was constructed at a higher speed than West Village Houses, considering it was a 1600-unit reinforced concrete high-rise project in contrast to West Village’s 420-unit brick and wood frame structure. The initial costs for land at 1199 Plaza were reduced by virtue of the site’s urban renewal designation. West Village on the other hand had to buy much of its land at market prices. Starrett found it could also move faster on the contiguous sites at 1199 with space to store and stockpile. These considerations plus the facts that Starrett was involved from the beginning of 1199, that the city was anxious to expedite the project, and that the sponsor had a full-time staff all helped. The fact that approximately 65 percent of the apartments received 236 funding was critical—not only in keeping down the financing costs of the project, but the carrying charges as well. Compare a two-bedroom apartment in 1199 in which the carrying charges are \$248 per month with the estimated carrying charges of \$460 per month for a two-bedroom apartment in the West Village. (Of course many other variables would determine marketing success, such as the large units at West Village, but that kind of cost differential counts most.)

One economic hurdle that affected both projects equally was the “costs” of getting working drawings through the Building Department. In 1199 a delay resulted when the out-of-town architects were asked to produce a staggering sum. They didn’t.

It would be too simple in comparing 1199 Plaza with West Village Houses to



Duplexes in low-rise wings all have open galleries and fire balconies (above). Two apartments share a fire balcony on the top floor of the duplexes, so that if a fire breaks out in one apartment, occupants may escape through the neighbor’s apartment. While the duplexes are small (designed according to strict Mitchell-Lama standards) they do include a dining area at the entrance next to the kitchen separate from the living room. Duplexes overlook courtyards and the river.

say it was a matter of low-rise housing not being economically feasible or for that matter not desired by the people who might live in it. The complaints about the first version of 1199 could even weight the argument for high-rise advocates. But such arguments may be specious. If anything, 1199 proves that varied kinds of housing are desirable, depending on the different occupants and the situation. People may desire low-rise or high-rise apartments depending on certain kinds of needs, self-image, what they are accustomed to. The West Village is a cohesive, knowledgeable, stable, and independent community. High-rise development would not only have hurt the 19th-century character of the district but would have been quite alien to the residents’ self-image. This is not the case in East Harlem. Thus the kind of housing suited for varying neighborhoods cannot be determined on

the basis of sheer assumption.

Aside from these issues, is the consideration that Hodne/Stageberg gave to including both options within their design. While it still may be predominantly high-rise, other choices exist. Theirs is a prototypical solution, which could be applied successfully elsewhere. But of course it still depends on the nature of the site, the neighborhood, the residents, prospective tenants, and even the particular moment. [Suzanne Stephens]

Outdoor galleries connect to elevators in towers, overlook courtyards and river’s edge, (photos, opposite). While small playgrounds are included in the court for younger children, an outdoor area for older kids is located atop the indoor recreational center (not shown).



#### Data

**Project:** 1199 Plaza Cooperative Housing, 2100 First Ave., New York, N.Y.

**Architects:** The Hodne/Stageberg Partners, Minneapolis, Minn.

**Client:** 1199 Housing Corporation.

**Program:** 1586 moderate- and middle-income co-op apartments for about 5500 people in four buildings each with 31-story towers and ten-, eight-, and six-story wings. The 1,602,000 sq ft of residential space is divided into 1194 simplexes and 396 duplexes and range in size from efficiency units (11 percent) to four-bedroom units, with the heaviest concentration in the two- and three-bedroom units (47 percent). Security, sun, view, and image were important design considerations, along with ample open space (77 percent of the site) plus an underground garage for 683 cars, 31,000 sq ft of rentable commercial and professional space, 53,000 sq ft of community facilities.

**Site:** 12 acres (four city blocks) on an urban renewal site adjoining the Franklin D. Roosevelt (East River) Drive, in East Harlem.

**Structural system:** reinforced concrete frame, flat slab construction, brick cavity walls.

**Mechanical system:** central steam heating with floor type convactor radiators; a/c sleeves.

**Major materials:** face brick, 4"x8"; cinder block; reinforced concrete; gypsum board partitions; aluminum windows; asphalt tile, cork tile, vinyl asbestos quarry tile, brick pavers on floors; clear glass; sprayed acoustic coating and suspended acoustic tile for ceilings. (See Building materials, p. 98.)

**Consultants:** Robert Rosenwasser Associates, structural engineers; Arthur L. Zigas & Associates, electrical and mechanical engineers; Herb Baldwin, landscape architect.

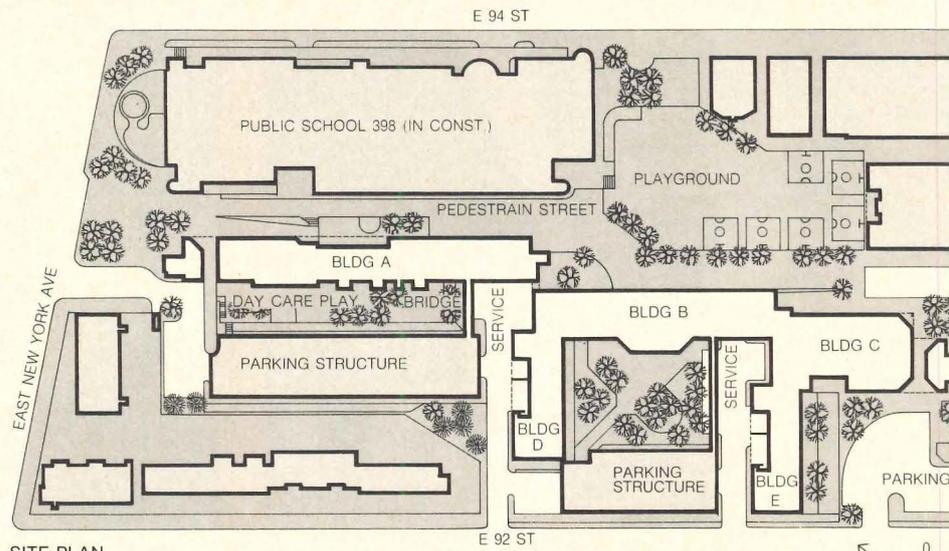
**Contractor:** Starrett Bros. & Eken, Inc.

**Costs:** \$65.4 million total; \$38.84 per sq ft; \$40,875 per dwelling unit (including parking, commercial, community facilities, landscaped plazas and decks).

**Photography:** Norman McGrath.

Rutland Road Houses, New York, N.Y.

# Brooklyn's Blakeslee



SITE PLAN

850-foot-long systems-constructed complex combines medium- and low-rise, and is staggered across two-city-block site where existing older houses were retained.



**Systems housing implies almost endless repetition, yet Stull Associates' new Brooklyn housing disproves generalities.**

If anyone ever thought that large complexes of systems-built housing had to end up looking like repetitive rows of the same dull egg crate, that fear can be put to rest. If anything, exactly the opposite is true. In the right hands, systems construction can bring a richness and variety to housing that, economically at least, could hardly even be considered with conventional means of construction. The best proof of this can be seen right now in the East Flatbush section of Brooklyn, in Stull Associates' Rutland Road Houses. This 438-unit five-building complex was built by the New York State Urban Development Corporation for low- and moderate-income tenants under FHA 236. It is a showcase for demonstrating the flexibility of an industrialized building system—the Blakeslee Housing System—applied to multistory residential construction.

The development began several years ago as a community project when local residents were involved in selecting a site for a new public elementary school. They found a largely vacant, two-block site that was surrounded by a park, a commercial street, and by two streets of low-rise, single-family detached houses. The UDC then agreed to develop the 7½-acre site as a joint housing and school package (the school, designed by Perkins & Will, is soon to be completed). In developing the site, the street between the two blocks was closed, and a new pedestrian street was created between the school, its playground, and Rutland Houses. New commercial shops face the pedestrian street at the end toward commercial Rutland Road; units for the elderly and the main building lobby are farther along, facing the playground, and at the far end the day care center faces the new school.

Most of the interconnected housing complex is ten floors high, but some parts range between that height and three floors. The entire project is built of off-site precast concrete components: exterior 8-in.-thick spandrel beams and 10-in.-thick insulated sandwich panels have exposed aggregate finish; floors and roofs are hollow-cored prestressed concrete plank that is normally 8 ft wide and 12 in. thick.

Except for building C, which contains 40 units for the elderly and has a hydraulic elevator that stops at every floor, the rest of the complex has corridors and elevator stops only at every third level. Two-floor apartments extend either above or below the corridor level, and interlock with single-floor units in such a way that no floor in a ten-story building is duplicated, and almost no unit plan is repeated.

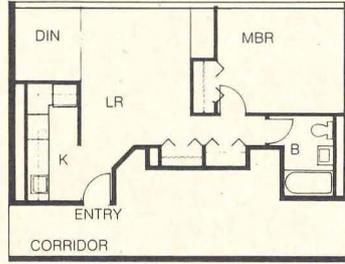
The majority of the family apartments, which range from efficiency to four-bedroom units, and which are mostly duplexes, were developed in two basic building types. In cases where units are exposed to the darker and noisier (because



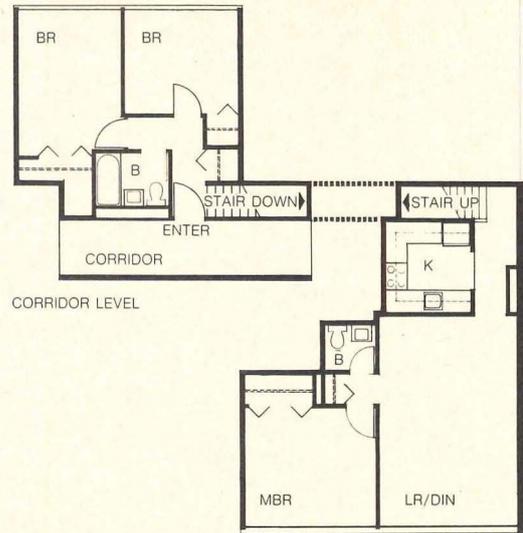
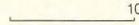
Northeast side (below) faces new school, southwest (above and facing page) faces courtyards.



**Rutland Road Houses**



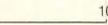
1 BR FLAT



CORRIDOR LEVEL

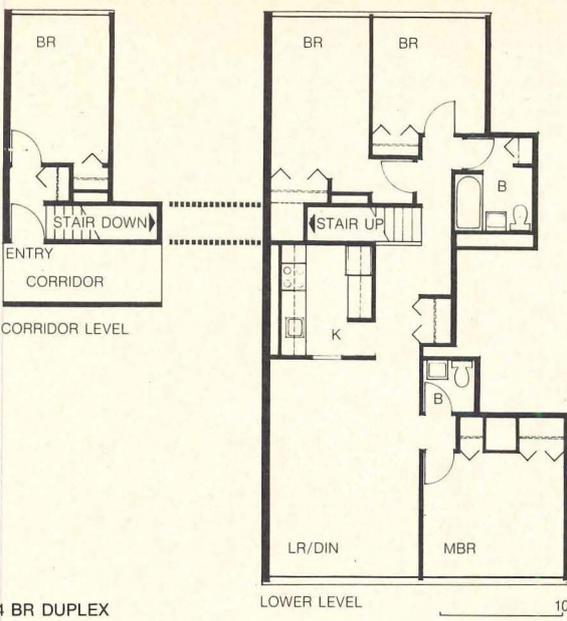
3 BR DUPLEX

LOWER LEVEL



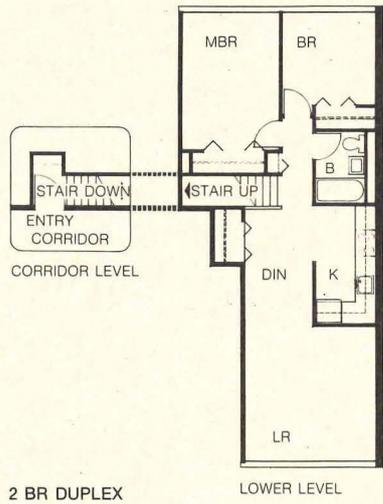
At north end, day care center (below) is off pedestrian street near school.





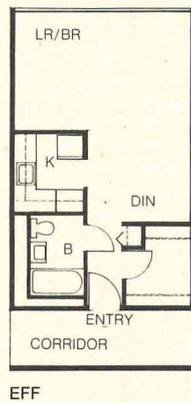
4 BR DUPLEX

LOWER LEVEL

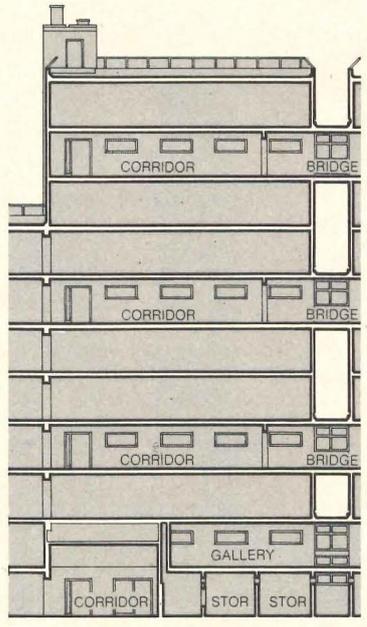


2 BR DUPLEX

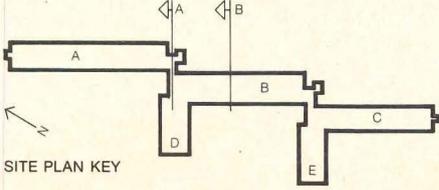
LOWER LEVEL



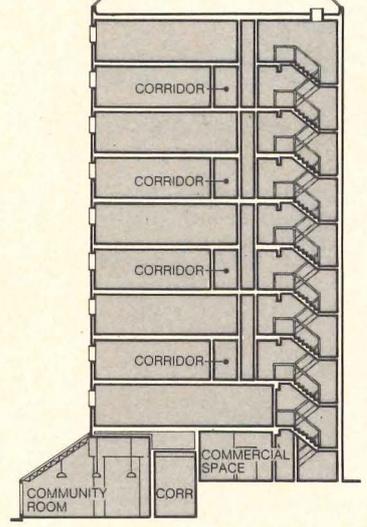
EFF



SECTION A



SITE PLAN KEY



SECTION B

of the playground) north side, bedrooms face that direction, leaving the living and dining areas to face the quieter southwest exposure. Bedroom façades employ full-wall panels with minimal openings, while spandrel beams and full-width windows have been used on the opposite sides. In the other building type, which has a consistent east-west exposure, the majority of the apartments are designed with a double exposure. Where spandrel beams are used as a wall system, the structural integrity of the beams, which span up to 39'-0", was maintained by a 6-ft-deep member. This produced a relatively high sill inside, but that has been somewhat alleviated by having small openings cast in the beams near floor level to provide increased window area. Because of the long-span characteristics of the precast concrete components, there was no difficulty incorporating a variety of ground-floor uses into the total envelope.

There are certain distinct advantages to the skip/stop elevator/corridor design. With fewer stops possible the elevator can move much faster, thus reducing everyone's trip time. But in addition, there are real economies in increasing the efficiency of corridor space and in doing away with two-thirds of the corridors and giving that space over to the apartments. Also, busy corridors tend to be safer corridors.

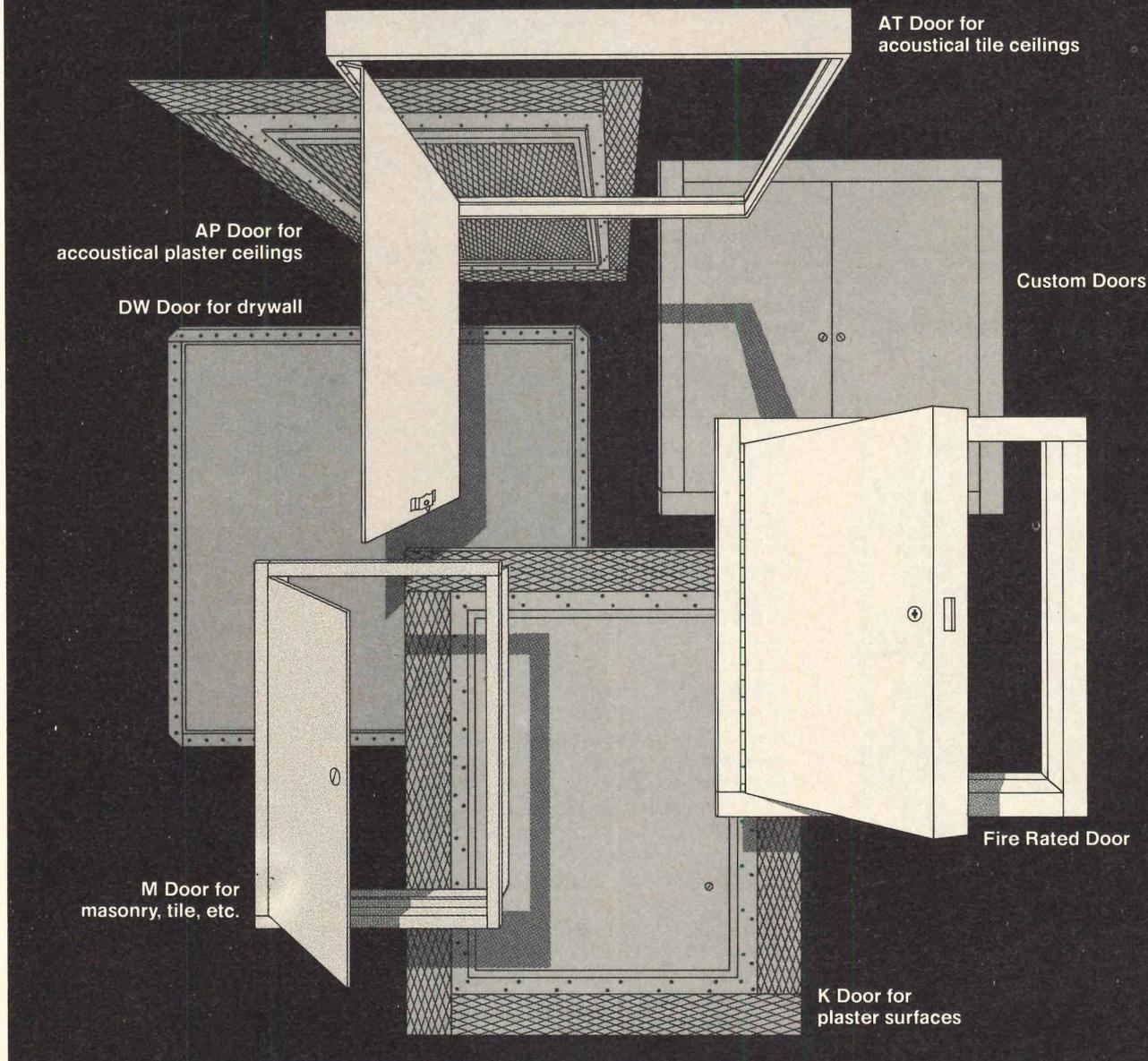
At Rutland Road Houses, with its pedestrian street, playground, inner courtyard, commercial and social facilities, its absence of unit duplication, and the rich and varied texture of the exterior walls, a genuine ambience has been created that could do much to dispel the myth of sterility usually associated with large housing projects. That this was accomplished with industrialized building system is of no small importance. That it was accomplished quickly and cheaply (by New York standards) is of even greater importance. This 440,000-sq-ft complex took less than one year from plant production to completion of erection, and only 29 months from the beginning of plant production to "move-in." And all of this for \$32 per sq ft. [David Morton]

Except for Building C (see site plan), where elevators stop at every floor that houses flats for the elderly, the rest of the development is composed mainly of duplex units; here, elevators stop only at every third, corridor-level, floor.

**Data**

- Project:** Rutland Road Houses, Brooklyn, N.Y.
- Architect:** Stull Associates, Inc., Boston, Mass.; Stephen Tise, design director; Charles Perez, project coordinator; Geoffrey Turner, project manager.
- Program:** 438 efficiency to four-bedroom units constructed for low- and moderate-income tenants under FHA 236, including 50 percent on-site parking, commercial facilities, day care center, and units for elderly.
- Site:** 7½ acres of essentially vacant flat land in East Flatbush, Brooklyn, surrounded by a commercial street and a large park on two sides, and by low-rise, single-family detached houses on the other two sides.
- Structural system:** concrete bearing walls, long-span prestressed plank. (The Blakeslee Housing System—a variation of the Bison system—is produced by a subsidiary of Westinghouse Electric Corp.)
- Major materials:** precast, prestressed and/or post-tensioned floor planks, exterior insulating sandwich panels and exterior spandrel beams with exposed aggregate finish, and interior crosswalls; reinforced concrete foundation; precast concrete and gypsum wall board partitions; aluminum sliding and double-hung windows; aluminum storefront doors and windows. (See Building materials, p. 98.)
- Consultants:** CR3, landscape; Flack & Kurtz, mechanical; Ewell Finley, structural; John Meadows, cost estimating.
- Client:** N.Y. State Urban Development Corp.
- Costs:** \$16.6 million, \$32 per sq ft.
- Photography:** Norman McGrath.

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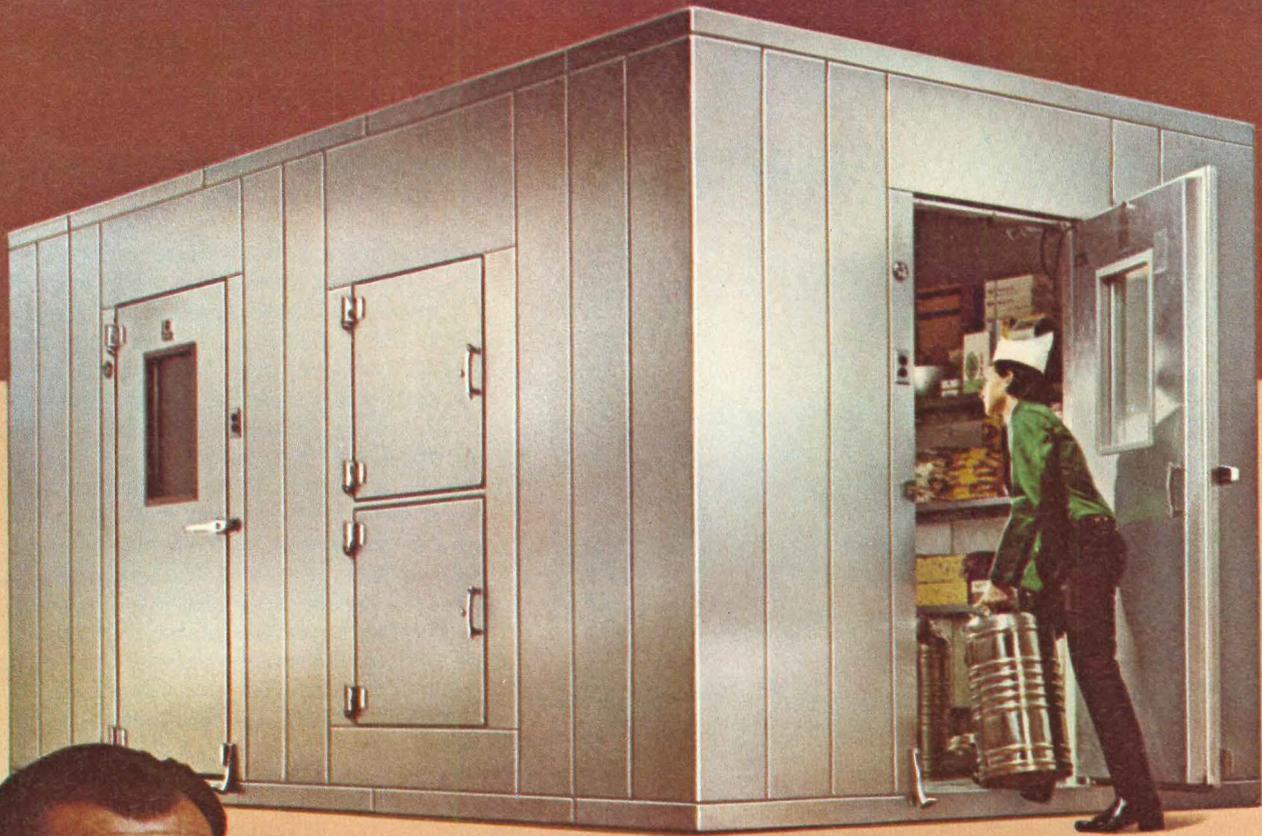


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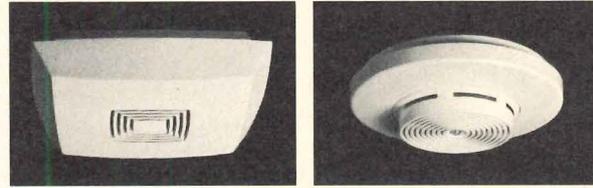
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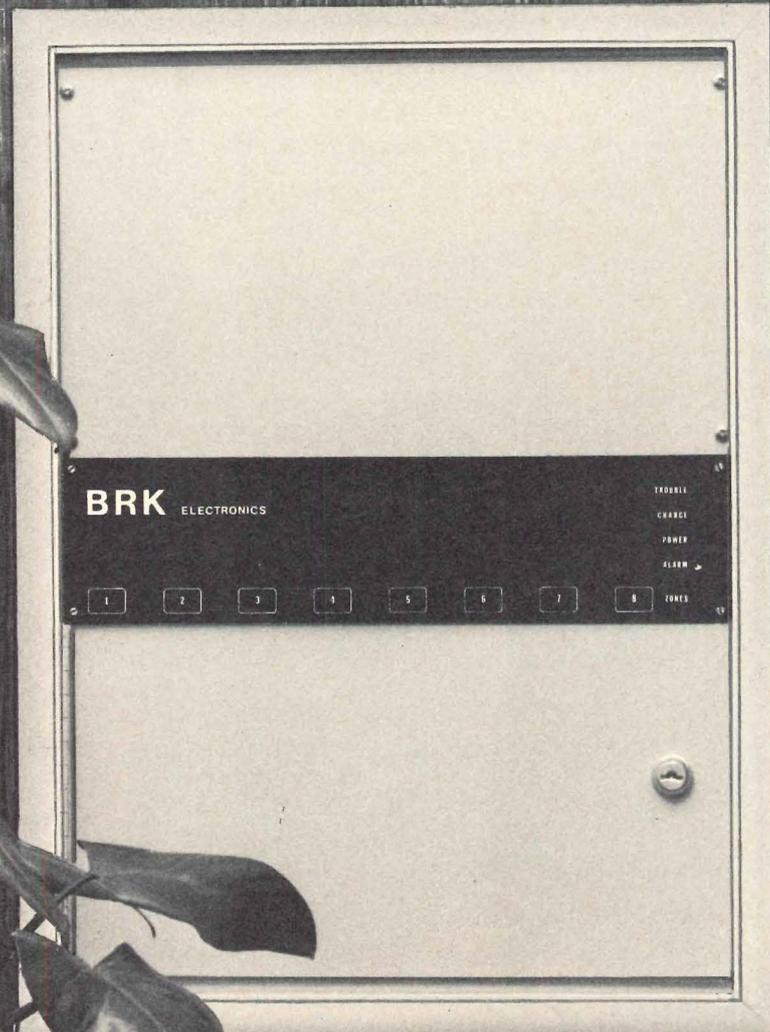
Other features include remote annunciation, battery backup power and float recharge system in the control panel, UL listing of detectors and panel, easy installation, and reliable operation. For more facts write or phone BRK Electronics, Div. of Pittway Corp., 525 Rathbone Ave., Aurora, Ill. 60538. Phone: (312) 892-8721.



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# A bellwether

William T. Lohmann

**The Construction Industry Affairs Committee Chicago, has been the bellwether of the construction industry since its origin in 1967. Its track record is impressive.**

The construction industry in the United States has always seemed to enjoy its divisive, competitive, disorganized nature. Its primary motivation has long been self interest. But the last decade has pressured the participants. Rising costs, mandatory safety requirements, new concepts of design liability, increased responsibility for product performance are forcing the industry to look unto itself.

The Construction Industry Affairs Committee of Chicago has been pointing the way since 1967. Two of its stated objectives are "to seek equitable solutions to industry-related problems" and "to formulate logical guidelines which clearly delineate the functions, duties, and expected performance levels to which those in the building industry should adhere." Its intentions are impressive.

CIAC's membership is also impressive—and willing to work together. CIAC was founded by the Chicago Chapter of the AIA, the Builders Association of Chicago (local AGC Chapter), the Mechanical Specialty Contractors Associations, the Consulting Engineers Council of Illinois, and the Chicago Chapter of the CSI. The Chicago Chapter of the American Subcontractors Association has recently joined. Thus far, CIAC's track record has been good. Twenty recommendations have been hammered out, each reflecting the approval of all member organizations. Fifteen implementation guides have been prepared by CSI, putting the recommendations into specification language. Three standard forms have been designed and copyrighted.

The CIAC recommendation on substitutions is used almost verbatim in many specifications in the Chicago area. It insists that contractors bid on specified products and points up the wastefulness of most substitution evaluation methods, which usually disrupt normal bidding/construction processes. Recommendation No. 9 proposes limiting the number of substitutions in several ways. First, by writing a tight specification, preferably with one or more trade names for each product. Second, by evaluating proposed substitutions during the bidding period but passing acceptable ones on to all bidders in addendum form, thereby re-

taining a competitive basis for them. Third, by considering substitutions proposed by the successful bidder before the contract is awarded. And fourth, by not considering substitutions offered after the contract has been signed, with several possible exceptions.

In at least one instance, CIAC flatly disagrees with AIA Document A201 "General Conditions of the Contract." Recommendation No. 18 states that critical decisions on the terms for substantial completion of a project should not be delayed until the end of the job. Instead it recommends that assignment of responsibility for heat, utilities, maintenance, insurance, and guarantees should be determined before bidding and incorporated into the contract documents.

Several other CIAC recommendations are contrary to accepted practice. Recommendation No. 7 rejects the concept of a net extra or credit for a contract change, stating that overhead and profit should be included in the cost of additional work, but excluded from omitted work. If both are involved in a change, the amount should equal the difference between the allowed extra and the allowed credit.

Recommendation No. 2 re-affirms the traditional one-year guarantee from date of satisfactory completion of the contract—with a major exception. It suggests that, for mechanical and electrical systems, pneumatic systems, elevators, etc., put into use for the benefit of any party other than the installing contractor (the general contractor or owner, for instance), the guarantee or warranty period should commence when the equipment is placed in operation.

Recommendation No. 8 on punch lists exhibits a refreshing bit of insight in its introduction. It points out that, there would be no need for a punch list if every trade performed its work to comply with contract requirements and its own normal workmanship standards. It further recommends job procedures that can eliminate most punch list items—careful supervision on the part of the contractor, a current written record of deficiencies, and immediate correction of unsatisfactory work.

On unit prices for building construction, CIAC recommends a precise description of each unit price so that an accurate and equitable proposal can be made. Recommendation No. 20 also suggests that unit prices should not be a part of the bidding documents, thereby requiring all bidders to submit prices. Rather they should be requested of only the low bidder and negotiated before the contract is signed. To be fair to the contractor, the recommendation suggests that separate unit prices should be given for additions and deductions, and that the accepted unit prices should be good for a fixed time period only. The last point alone would achieve more reasonable unit prices.

CIAC's work has reached all parts of the country. Its mailing list has grown to 4000 names. In Chicago, its next effort to promote dialogue and cooperation within the industry will be a series of informational luncheons with key personnel of local architectural and engineering offices. But the thrust is nationwide.

For additional information, write to the Construction Industry Affairs Committee of Chicago, 228 North La Salle Street, Chicago, Illinois 60601. □

**Author:** William T. Lohmann, AIA, CSI is Chief Specifier for C. F. Murphy Associates, Chicago, Illinois.

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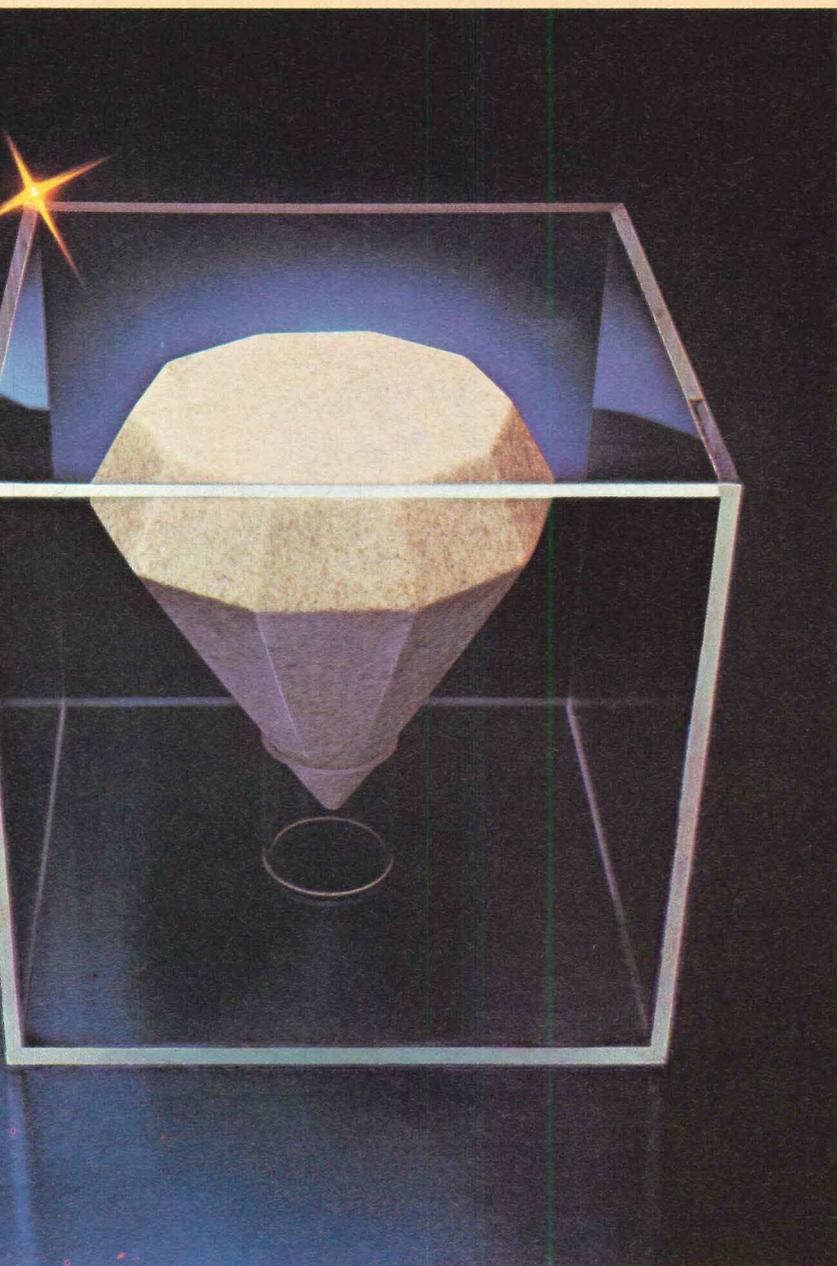
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Technics: Building stone in architecture

# Stonemasonry it



**The history of stone in architecture reaches back to antiquity, but today's technology of quarrying, dressing, and installing stone suggests new potential for it.**

Building stone in architecture: requiescat in pace. Somewhere on his path through the 20th century, the architect turned away from the stone quarry. The material was as sound as ever, but nobody sought posterity from architecture any more. No more "forever." Pyramids, cathedrals, and railroad terminals—those imperishable stone-clad dreams—were humiliated by neglect, flung dying upon microfilm and then, all too often, demolished. Perhaps eternity frightened us. So did stone, its helpmate.

Stop the eulogy here. Stone is very much alive in architecture in 1976. Not because of any rekindled yearning for immortality through architecture. Surely the symbolic content of architecture has never been more superficial than it is today. On the contrary, stone has reestablished its pres-



Building stone has been exploited by architects for centuries for its plastic quality. A stone carver (opposite page) works on a Corinthian column capital for the new portico, First Church of Christ, Scientist in Boston (above), by I.M. Pei & Partners. A 30-ton limestone block is reduced to a 9-ton capital in 400 hours of rough cutting and 500 hours of carving. Opposite photo is from a series of ads for Corinthian Broadcasting Corp., a division of Dun & Bradstreet Companies, Inc.

ence on the drafting board by transcending its destiny. Strong, beautiful, and durable as before. But lighter, more systematized, and easier to handle. It is almost a new material for architecture.

The physical transition from cubic stone to veneer stone to thin veneer stone mirrors the technological transition from masonry bearing wall structure to self-supporting steel or concrete structure with masonry back up wall to steel or concrete structure with curtain wall. That is to say, the three ages of building stone show its decline as a structural member and its rise as an architectural element. As P/A has discovered in talking with the building stone industry, the present age of stone has wrought profound changes in the way stone becomes architecture.

**Stone is not eternal**

The cathedrals did not lie. Stone is not eternal; it erodes. Albeit slowly. When used in prodigious quantities of block weighing several tons or more apiece, any species weathered the first few centuries with grace. It was not uncommon for the architect, descending into the quarry with client in tow, to know precious little about it. Nor was it necessary for him to.

But the more stone resembles an engineered building product, the more critical are the differences between species. For we subject stone to conditions of structural and environmental stress no Gothic stonemason would recognize. Though some species resist these assaults better than others, any stone can be successfully used by the designer who exploits its natural characteristics. A brief review of the major species of building stone follows.

Geologists recognize three great classes of rock: igneous, formed from cooling magma (liquid rock), sedimentary, formed from continuous layering of sediment, and metamorphic, formed from external forces of stress and heat. Commercial nomenclature generally supports this description. However, there are exceptions whose implications may work for or against the designer.

**Granite.** The most abundant rock in earth's crust results from the slow cooling and solidification of magma. It has an even texture of large, coarse, and formless crystalline grains which were crowded in growth to form a dense, hard rock. Its principal minerals are feldspar and quartz, with the former dominating the composition and generally determining the overall color. Granite is usually gray in color, but pink, red, yellow, and green granites also exist.

It is an excellent building material. Capable of sustaining some 15,000 to 20,000 psi in compression; homogeneous in texture, highly resistant to weathering and damage, pleasing in color, and workable, granite has a long history of architectural use. It also has some qualifications. The rock is very heavy, spalls readily when subjected to fire, and discourages intricate modeling by its great hardness.

No continent is without vast exposures to granite. In the U.S., the Atlantic seaboard from Maine to Georgia, the northern states of Michigan, Minnesota, and Wisconsin, and such mountains as the Ozarks, Black Hills, and Rockies have important bodies of it. Dimension stone production comes largely from Vermont, Georgia, South Dakota, and Wisconsin. Crushed and broken stone production comes from California, North and South Carolina, Georgia, and Vermont. Other significant commercial sources of granite

## Technics: Building stone in architecture

include Canada, Sweden, and Finland.

**Limestone.** Formed in fresh or marine waters largely from the shells of marine fauna, this common sedimentary rock is dominated by calcium carbonate (calcite). It exists in many varieties. Chalk comes from microscopic shells; oölitic limestone (oölite) appears as small, fish egg-sized spheres cemented together; pisolitic limestone (pisolite) has spheres as large as peas; travertine is calcite precipitated from spring water; marl comprises calcite and clay in an incoherent mixture.

The industry markets limestone primarily as "oölitic limestone" and "dolomitic limestone" (dolomite). Oölite is virtually free of crystalline structure, uniform in composition, texture, and structure, and high in internal elasticity, which explains its endurance of extreme temperature changes. Dolomite is crystalline in character, better in compression and tension than oölite, and more varied in textures than oölite. In either form the material is generally easy to carve, comes in a wide range of colors besides white, gray, black, and brown, and though easily scratched by a knife, wears well. It does not take a high polish.

Limestone appears on every continent. It is particularly widespread in the eastern two-thirds of the U.S. As it is a principal raw material for cement, lime burning, crushed and broken stone, and dimension stone, it is quarried in great quantities. Dimension stone is produced in Indiana and Missouri. Crushed and broken stone comes from Pennsylvania, Ohio, Illinois, Michigan, Tennessee, and New York.

**Sandstone.** Percolating waters, bearing cementing agents through underwater marine deposits of sand, turned individual sand grains to sandstone. The transformation was rarely complete. The well-rounded grains, mostly quartz in content, can be rubbed off individually. It is stratified, its color varying with the nature of the cementing material from white or gray to yellow, brown, pink, red or green.

Sandstone can be easily shaped. But its many unfilled interstices make it extremely permeable. (On a larger scale, sandstone deposits have created great pockets which water, gas, and oil have subsequently filled.)

There are sandstone deposits across the world. Dimension stone in the U.S. comes from New York, Ohio, and Pennsylvania. Though demand for this species has not kept pace with other stones, production continues to provide a steady supply for U.S. building projects.

**Marble.** Otherwise called recrystallized limestone, or in the presence of magnesium carbonate, recrystallized dolomite, marble is typically a metamorphic rock formed from limestone placed under such pressure and heat that all traces of its original clastic grains or fossil remnants have been obliterated. (Some limestone has recrystallized without metamorphic or diastrophic action.) Consequently, its very coarse to very fine interlocking crystalline grain exhibits a very uniform hardness and consistency; free of cavities or pores, it is easier to carve than limestone and takes a higher polish. It is usually light in color, white or gray. However, many color variations occur because fractional percentages of numerous minerals show up in broad colorings and delicate markings to produce yellow, brown, red,

green and black.

Marble has been a favorite of artists and architects for the easy workability and lustrous polish of its strong, often exotically colored substance. This appeal exacts a price, however. The more unusual colorings and markings that appear, the greater the likelihood that mineral content and veining will prove troublesome to the stone's chemical and physical stability. (The veins were caused by the great weight of overlying matter during metamorphosis which sometimes induced plastic flow in the stone. The vestiges of that flow remain as potential planes of future movement.) In addition, limestone marble effervesces in dilute acid. Considering how potent a chemical soup our polluted atmosphere can be, this reaction may be no small threat.

The world has abundant supplies of marble. In the U.S. it is found from the northeast to the Appalachian belt and in many western states. Dimension stone comes mostly from Vermont, Georgia, Tennessee, and Missouri. Crushed and broken stone is produced in New York, Vermont, Tennessee, Texas, and Maryland. Special marbles chosen mainly for their unique appearance are also shipped from Italy, Greece, North Africa, and the Republic of South Africa (dolomitic marble). Travertine, while technically a limestone, is quarried in the U.S. and Italy as a marble due to its frequent ability to take a high polish.

**Slate.** For years this exceedingly fine-grained metamorphic rock, formed from clay sometimes mixed with sand or volcanic dust, has been used quite literally by man. That is, its superinduced structure cleaves readily into thin, smooth sheets of fairly good tensile strength. Sheets ideal for roofing, flooring, and blackboards are available in black, blue, purple, red, green, and gray colors.

The material seeks a wider market today. Besides its staple role as a roofing tile, slate is offered to designers as a flooring tile, fascia and spandrel panel, and window sill or stool. Success in this venture is already visible in a high-rise office tower sheathed in glass, and—of course—slate.

Slate is found chiefly among the rocks of older geological systems. In the U.S. it comes principally from Pennsylvania and Vermont. Secondary sources include Maine, New York, Virginia, Georgia, Arkansas, and California.

### Choosing your pet rock

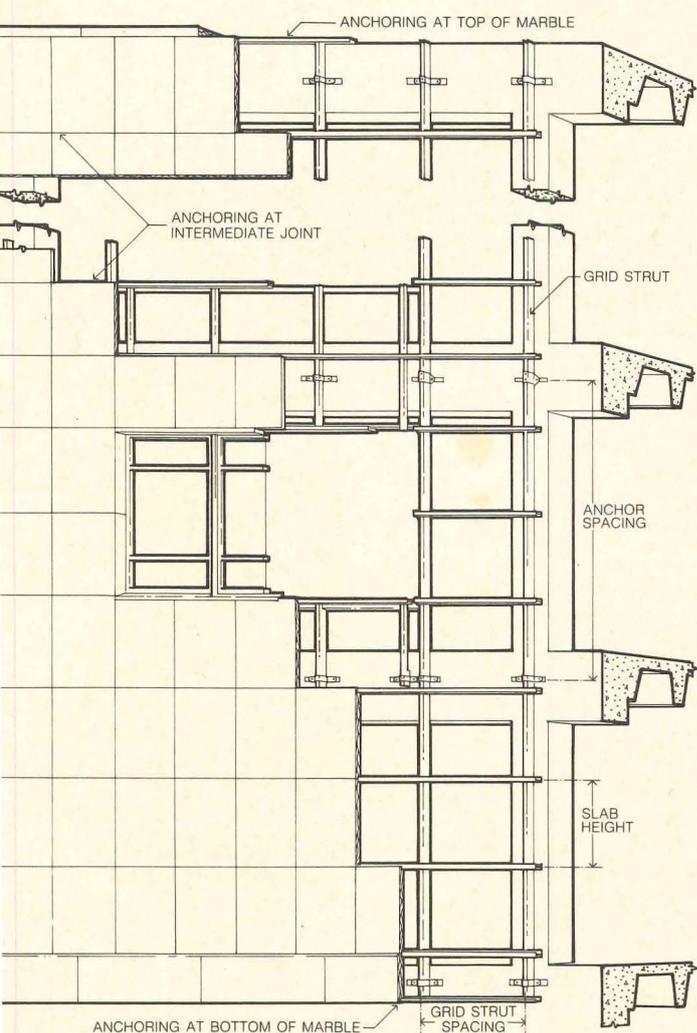
Dressing architecture in building stone is like tailoring a suit for a man of atypical proportions. Or so says the industry. As Peter Pirozzi, president of Peter Bratti Associates, New York, a respected stone-setting specialty contractor with engineering capability points out, one building's stone detailing simply will not dress another. Fortunately, these diversities will not deny us some generalities about how the material is selected, designed, quarried, fabricated, and finally installed.

The client may anticipate that once-obligatory (and quite unnecessary) excursion to the quarry, but the architect's first deliberations on building stone selection should be somewhat more mundane. As the industry perceives the problem, his criteria for selection might stand in this order of priority: price, availability, endurance, color, and surface processing. Repeat: color comes *later*. Placing color anywhere but first may sound like sacrilege to the *ancien régime*. Today it is only common sense.

**Price.** Few architects should be surprised that money

thrusts itself so rudely into the selection process. What price psf can be absorbed by the particular bid package in question? The answer is not merely an apologia for quality on the exterior skin, interior walls, floors, or roof of a building. All too often both architect and client now assume that stone cannot compete with rival materials. This is an understandable attitude based on historic precedent. But industry automation, low energy production cost, systems design, low level maintenance, and life cycle cost analysis have greatly improved the material's position in the marketplace. The architect may find the presence of a stone-setting specialty contractor or the architectural representative of an established quarry can encourage the development of an economically (and technically) sound proposal for building stone at this earliest stage of consideration.

**Availability.** The stones that survive this scrutiny must be actually available. Supplies cannot be taken for granted.



The Zibell Anchoring System is described as a "grid strut system" by its designer, Georgia Marble Company, Atlanta. This important variation on the grid suspension system of stone anchoring employs steel channels and extruded aluminum anchoring hardware to establish a coordinate network across the plane of the curtain wall. Stone panels are easily inserted and removed with considerable freedom from conditions at any point on the main structure. The diagram shown here is drawn with indeterminate dimensions as the designer has leeway to set his own proportions. Based on stone thickness and strut size, anchor spacing ranges from 4'-0" to 14'-0", strut spacing from 2'-3" to 4'-0".

Projects have been stalled for months, even years, for want of more stone. Is there a quarry to furnish the type and quantity of stone desired? Is the quarry of particular interest flourishing in sound physical and financial health?

The stones that answer these questions are then judged for their endurance. Specifically, this refers to their ability to resist atmospheric agents present at the intended site, be they chemical, organic, or mechanical in origin. Among the factors that contribute to this quality are: modulus, hardness, polish, internal structure, absorption coefficient and chemical activity, color, and surface processing.

**Modulus, hardness, and polish.** Stone is excellent in compression but less effective in tension. The balance should be determined for each species in question. In addition, the ability of a species to establish and hold the integrity of its surface against environmental forces must be checked in terms of its hardness and polish.

**Internal structure.** Denser, harder material with fewer veins needs minimal filling, gluing, or other consolidation treatments if any. The more homogeneous the internal structure, the more uniform its resistance to external stress.

**Absorption coefficient and chemical activity.** Exposure to atmospheric moisture in the presence of other reagents sometimes may degrade the bonding elements of certain species; so much so that their thin veneer stock may eventually fail as placed. Otherwise, in a less fatal but equally disfiguring reaction, soluble salts in such building materials as mortar can be deposited by escaping interior humidity on the surface of the stone as a troublesome efflorescence.

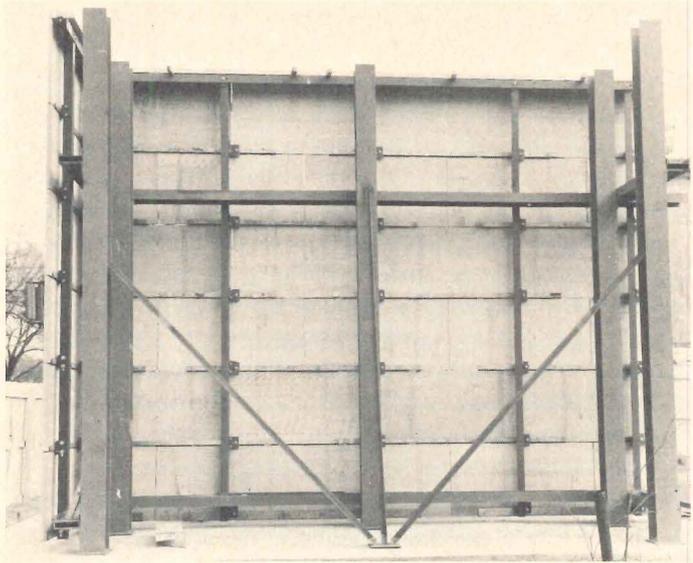
**Color.** Choosing stone by color within a range of structurally adequate species is far more sensible at this point of inquiry. Stable minerals tend to retain color; e.g., granite generally retains its color as installed whereas limestone tends to fade and bleach. The industry believes the architect can be far too fastidious in this matter. By refusing to accept the full color range found in the quarry, he pays a heavy unseen premium.

**Surface processing.** The more erosion affects the performance of a particular stone, the less surface it should expose to environmental attack. Finer finishes clearly minimize surface area as well as attenuate natural color. However, if a stone is capable of taking a high polish and is extremely durable as well, the architect can choose from a rustic, medium, or fine finish.

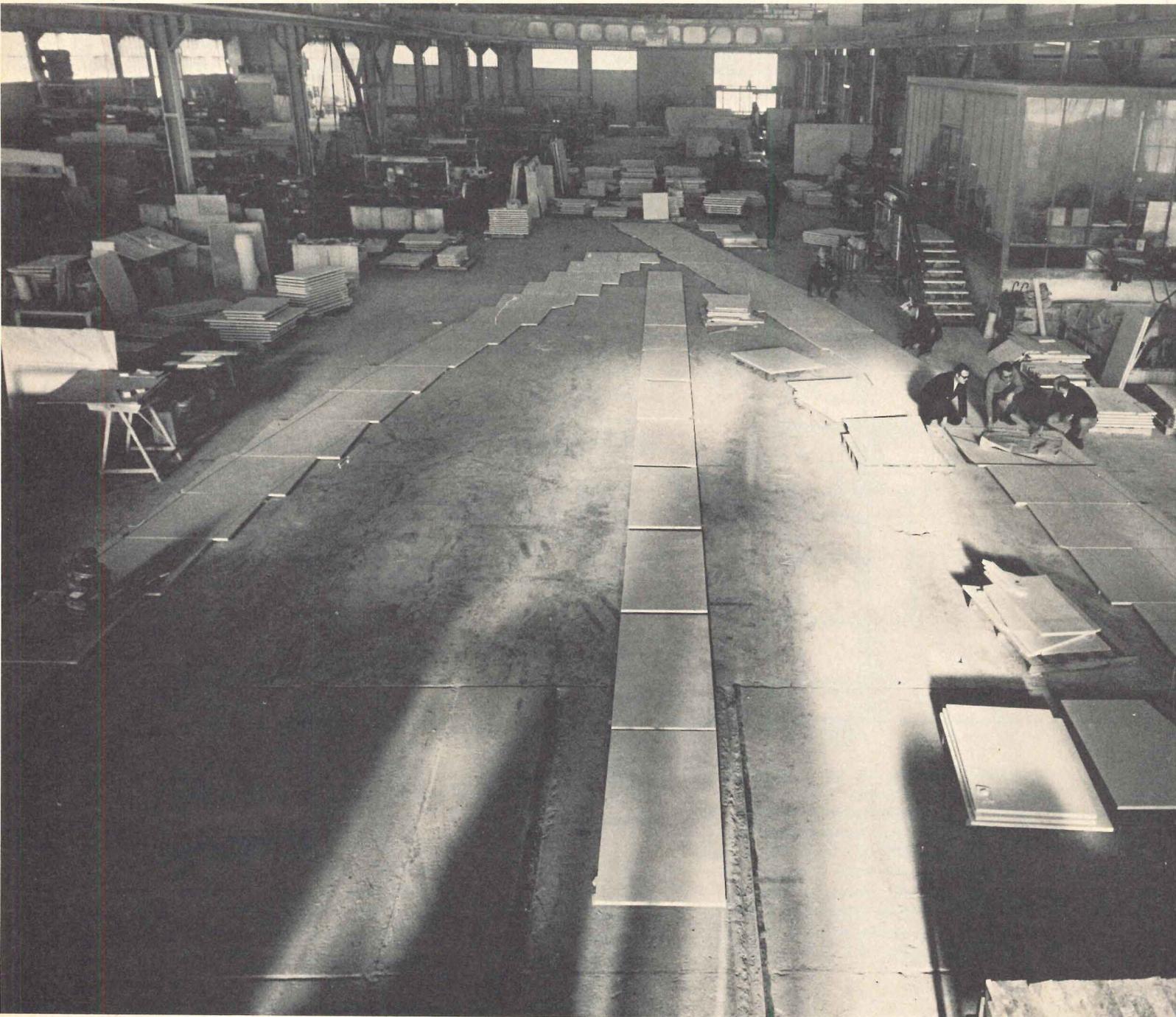
### Getting stoned

Designing in thin veneer stone calls for exacting engineering standards. The architect is advised to establish his aesthetic conditions for stone so as to be compatible with the structural necessities of the installation. It is increasingly common to see the architect develop his design concept, i.e., scope, specifications, and details, for stone in close cooperation with a specialty contractor or a quarry representative.

Does designing in stone sound like hard work? The industry feels that the problems arise when the architect insists on "soft pencilling" too late in the design process to elude heavy engineering penalties. The designer should be aware of the technical aspects of stone design and installation. Some of the more important factors include: slab thickness, joint conditions, environmental forces, anchoring, joint sealing, and maintenance. A short outline follows.



Scenes from the building stone industry. Above left: quarrying stone. Above right: steel-framed panel test mock-up. Below: fabricating shop.



## Technics: Building stone in architecture

**Slab thickness.** How much a slab can safely erode may not be an issue in many designs. However, slab thickness is directly tied to panel stress distribution, the structural span width, and density and modulus of the stone.

**Joint conditions.** Where a panel fits into the building's stone matrix generally determines what stress it must bear. Positions like those at the boundaries of planes are often subject to larger forces than those in the centers. Thus the shapes of linkages at a joint should be carefully crafted with structural safety and fabricating simplicity in mind.

**Environmental forces.** This covers a multitude of sins. To name a handful: dead weight, wind load, humidity, rain, frost action, masonry structural shrinkage, permanent and elastic deformation of structure, thermal movement, and building structure by height, span, and generic type. Most of these forces should be self-explanatory. Suffice to say a building must respond to environmental forces whether or not its stone veneer is sympathetic to them. Therefore, if the stone cannot react, it must submit to such dissociative consequences as spalling, or something worse.

### Rocking and rolling

Anchoring stone is an art in itself. In the current state of the art, exterior panels of thin veneer are independently suspended from the main structure in an effort to give them ready access and sufficient play across the planes of the structure. Yet there are no easy formulas to stone-setting. Each joint condition invokes a unique solution. The generalization below summarizes basic techniques for anchoring exterior wall panels.

**Complete mortar core.** Mortar alone cannot adhere an exterior slab to the main structure. But a mortar core (between back of slab and backup wall) working with anchors, ties, and hangers which are set into the slab and tied to the main structure establishes an extremely tough, rigid connection. Note that the anchoring hardware is sized to bear the slab weight without assistance of the mortar core.

**High strength mortar and epoxies.** The use of new high-strength mortar and epoxies to bond crushed and broken stone products directly to prepared substrate surfaces has enhanced the role of building stone as a decorative rustic motif. The exact technique varies with the nature of the stone, which may appear as rubble (large, irregularly shaped stone partly trimmed or squared), chunk (similar but smaller fragments than rubble), ashlar (rough-finished rectangular blocks), and split ashlar (exhibiting a natural quarry texture because of machine or hand splitting).

**Relieving angle and mortar.** Retention anchors of metal strap, wire, or dovetail configuration are set into the slab at boundary edges (and at midpoints if needed) and tied to the main structure by load-bearing angles. Although mortar is then placed in points or patches to give rigidity to the anchoring hardware, it is not expected to carry a load.

**Grid suspension system.** This new technique has been devised to accommodate thin veneer panels. Vertical channels called "struts," horizontal extruded angles with retaining lips, fastening clips, and other hardware combine to form a metal grid that is attached to the ends of the floor slabs of the main structure of steel, concrete, concrete ma-

sonry, or hollow tile. Into this grid system slip stone panels, cut with horizontal kerfs at the soffit and base course lines and either kerfs or peg holes at intermediate horizontal joint faces. The elegance of this solution is that it frees panel placement from the vagaries of physical conditions at any point on the main structure while it greatly simplifies the attachment and removal of any single panel.

**Steel framed panel.** Another new anchoring technique is the mounting of stone panels on a steel frame of junior I-beams which is then hoisted to supporting angles set into the main structure. Again, the emphasis is on simplifying the joinery and accelerating the erection process. Many individual panels can be assembled within a frame and raised into position as one huge composite panel, resulting in considerable savings of time and cost using this technique.

**Precast concrete veneer.** With appropriate accommodation for the different coefficients of expansion of concrete and stone, stone veneers can now be applied to precast concrete members in the shop.

**Prefabricated unit.** In this new technique, stone components are shop-fabricated as complete wall panels for simple bolt attachment to metal plates cast into the floor beams of the main structure. The degree of modeling the designer can achieve is easily comparable to most precast work. Such features as glass reglets cut to receive window gaskets may be easily provided for in the shop process.

### Don't rock the building

Joint sealing is as critical to the performance of stone panel systems as it is to the aluminum curtain wall. Stone has a relatively low coefficient of expansion but it is not negligible. Add to this thermal phenomenon the other environmental forces that affect the main structure and it is clear that both working and non-working joints require quality sealants. Whether the final selection is mortar, mastic sealant, or preformed gasket, it must meet the requirements of any good sealant job. (Does the joint move considerably? Is adherence of sealant to substrate a problem? Will chemical agents in the sealant react with the stone or any other important adjacent building material? How much exposure must the joint endure?)

Stone theoretically requires no maintenance. However, the industry suggests an occasional cleaning can be beneficial. Rather than rely on high pressure sandblasting, which removes stubborn stains but hastens weathering, the industry advises a medium pressure scrub with water and mild detergent. This technique has already been successfully demonstrated in historic preservation work.

### Stalking the quarry

Little quarries have been known to give birth to mighty boulders in America. The building stone industry traditionally has been a loose federation of small family-owned producers. Tightly competitive, operating on small profit margins, and torn between old customs and new techniques, these fiefdoms occasionally forgot that other classes of building materials—and not other varieties of building stone or rival quarries—were their competition. This state of affairs saw producers withholding technical data from one another even when the industry's hold on the construction market was slipping.

Which was the case. When the curtain wall draped its

## Technics: Building stone in architecture

St. Peter's Church, New York by Hugh Stubbins. True plan of roof. It is often the responsibility of the stone setting specialty contractor to develop and test the architect's concept into a workable construction. Here Peter Bratti Associates resolves the problem of anchoring stone to an inclined plane of some 50 degrees slope.

graceful and seductive veil over the architect in the 1950s, the building stone industry found its common cause. In order to maintain the appeal of its product, the industry streamlined its procedures and techniques and shaved its centuries-old product down from bearing wall block to ever thinner veneer slab.

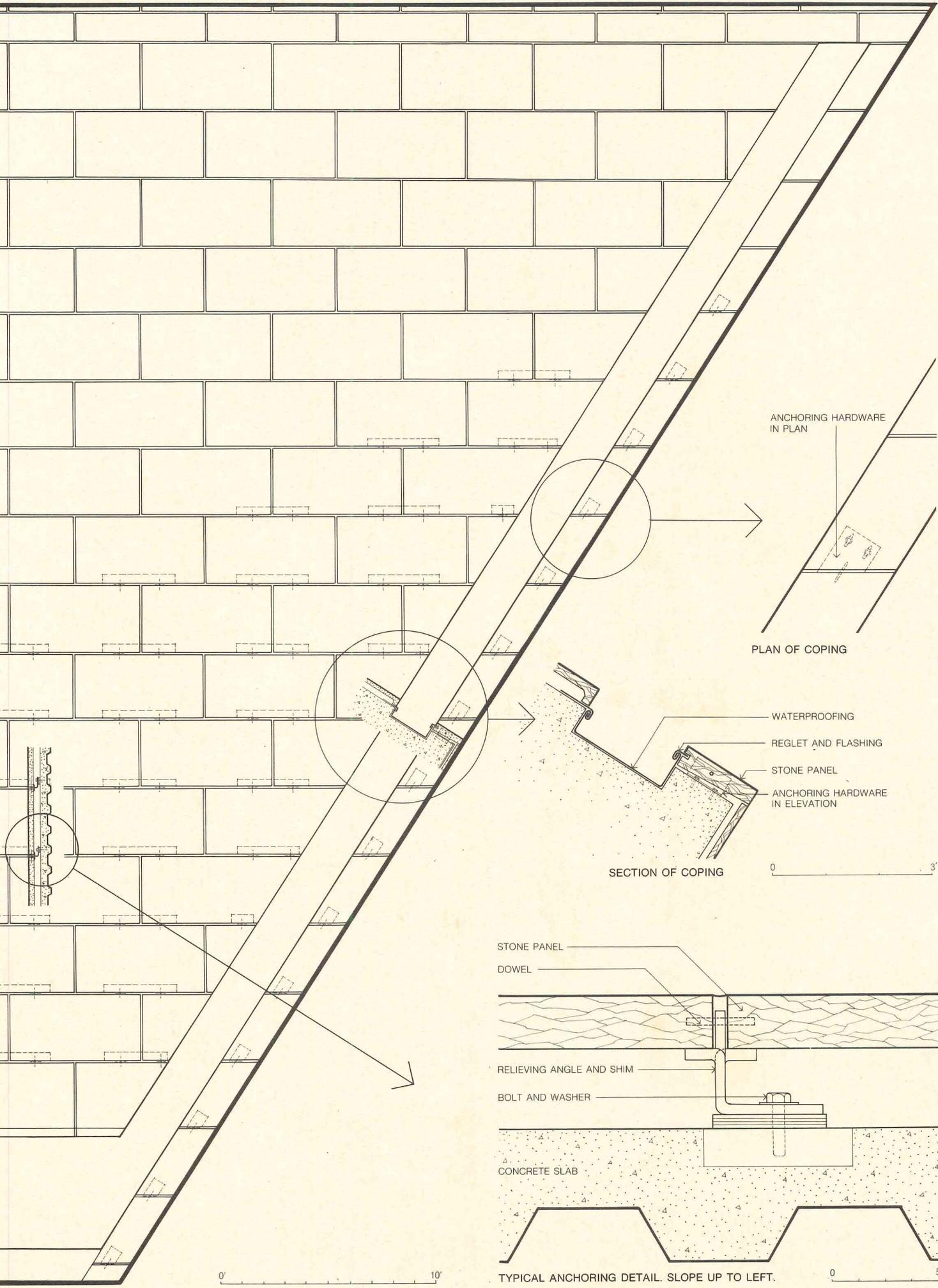
It is still a custom service for the architect, however. Although many quarries and fabricating shops are now equipped with modern technological equipment for the quarrying, dressing, and handling of stone (e.g., fork lifts and pneumatic tools in the quarry, wire saws, diamond core drills, automatic polishers, block, gang, and coping saws in the fabricating shop, and Chicago booms on site), there are no "standard" sizes of stone and no stockpiling. Dimension stone is generally quarried when a decisive use (to which architect, contractor, and client are formally committed) is found.

The path from quarry to site is very flexible today. Where once the architect dealt primarily with a quarry, he may now choose to negotiate with a systems-oriented specialty contractor instead. Fabrication can be completed at the quarry or at the fabricating shop. It has not been unusual for stone to be quarried in one locale, shipped to another for fabrication, and shipped again for installation in a third. Price and quality regulate this movement as truck and ship facilitate it.

All these dreadful catchwords: systems, prefabricated, and life cycle cost analysis. They would be so many hollow clichés to the builders of the seven wonders of the ancient world. The philosophical distance between our architecture in stone and the Great Pyramid of Cheops, the Hanging Gardens of Babylon, or the Colossus of Rhodes is at least partially closed by man's continual admiration for the strength and beauty of stone. Closed by a stone's throw, of course. [Roger Yee]

**References.** Architects seeking detailed information about the use of building stone in architecture are advised to inquire at the Building Stone Institute, 420 Lexington Ave., New York, N.Y. 10017. The BSI produces two standard annual reference works, *Stone Catalog* and *Stone Information Manual*, which are available to designers. An authoritative text on building stone technique is *A Technical Guide to the Rational Use of Marble*, 1972 by the Association of the Italian Marble Industry, Rome, produced under the auspices of the Italian Institute for Foreign Trade.

TRUE PLAN OF ROOF. SLOPE OF ELEVATION BEGINS AT TOP OF PAGE.



# P/A Book Store

Described on the following pages are architectural books that are now available to you from leading publishers. Each has been selected for its usefulness to you in the various aspects of your professional practice.

Book orders will be forwarded to the publishers who will bill you direct, including all required state and local taxes. As purchases of professional and business publications are tax deductible, we suggest that you retain copies of the publishers' invoices.

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### 1 Construction Inspection Handbook

By James J. O'Brien, 512 pp., 140 illus., . . . \$17.95

Outlines the duties, requirements and interests of the construction inspector. Describes the "whys" as well as the "how-tos" in observation of construction quality. Including handy checklists to work from, the book shows you exactly what should be reviewed and inspected.

**Circle B601 under Books.**

### 2 New Uses for Old Buildings

By Sherban Cantacuzino, 280 pp., illus., . . . \$29.95

'New Uses for Old Buildings' presents an architectural concept whose time has come. There are many unused or under-utilized buildings existing today whose construction and detail — which can never be recreated — should be preserved. But today's increasingly sophisticated demands for standards and services, as well as tighter codes for fire and safety, make the conversion of an old building to a new one a formidable task.

**Circle B602 under Books.**

### 3 Perspective: a new system for designers

By Jay Doblin, 68 pp., illus., . . . \$7.50

The first system developed to solve the kind of drawing problems encountered by designers. Eliminates the complex mechanical drawing that an architect normally employs in his traditional way of working with plans and elevations. The system offers a simpler method of visualizing any three dimensional object accurately and quickly.

**Circle B603 under Books.**

### 4 Marinas: A Working Guide to Their Development and Design

By Donald W. Adie, 336 pp., illus., . . . \$39.95

Boating occupies an increasingly important position in the major growth industry of leisure. Because boating involves vast expenditures, and the need to conserve and use water resources wisely, these facilities demand high ex-

pertise in planning and design, this up-to-date guide provides.

**Circle B604 under Books.**

### 5 Architectural Graphics

by Frank Ching, 128 pp., illus., . . . \$9.95

This book presents graphic techniques available for conveying architectural ideas. Included is know-how on ornament and materials; drafting; architectural conventions for orthographic, parallel and perspective drawing devices for rendering tonal values and context; graphic systems and lettering; freehand sketching, diagramming; and effective presentation of design proposals.

**Circle B605 under Books.**

### 6 Architectural Rendering The Techniques of Contemporary Presentation

By Albert O. Halse, 326 pp., illus., 2nd edition, 1972 . . . \$24

This completely up-dated revision the most widely used guide to architectural rendering covers all phases from pencil strokes to finished product — and shows how to achieve the desired mood, perspective and color effects, select proper media and work in different media.

**Circle B606 under Books.**

### 7 Construction Design For Landscape Architects

By Albe E. Munson, 256 pp., illus., . . . \$11.50

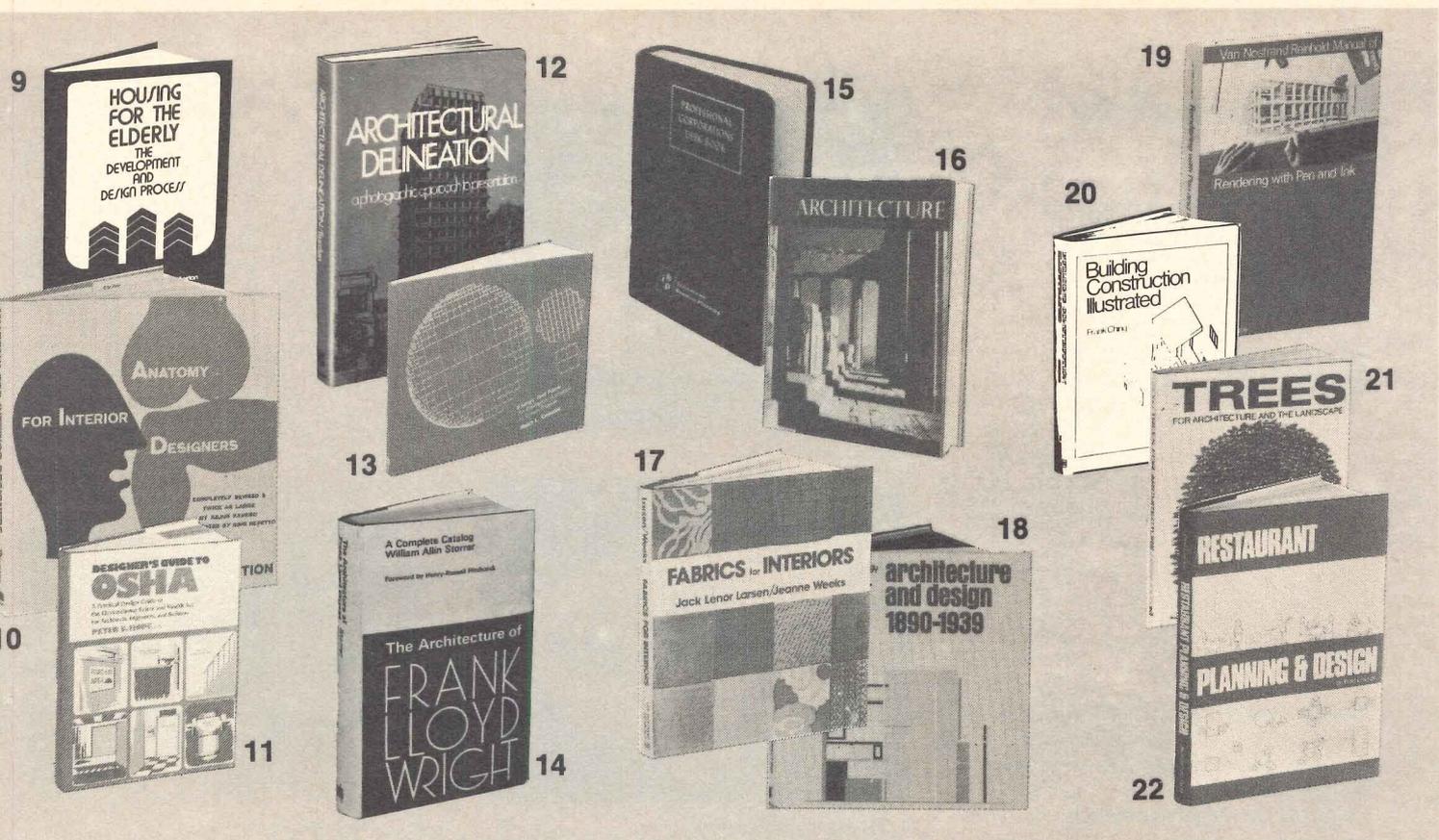
This volume is a complete guide to the preparation of a building site for construction or landscaping. The book is written for use as a rapid reference for the practicing landscape architect as well as a handy reference guide for short-cut methods that will be of interest to the civil engineer doing site improvement plans.

**Circle B607 under Books.**

### 8 Residential Designs

Edited by David E. Link, 192 pp., . . . \$14.50

Hi-rise or low cost, condo, multi-unit, custom or townhouse, here's a book that shows you the very



class. Complete collection of books with over 200 illustrations showing techniques used by some of the nation's leading builders, planners and designers.

**B608 under Books.**

### Housing for the Elderly

By Mac Green, Bernard E. Fedewa, William A. Johnston, William M. Deardorff, and Howard L. Deardorff, illus., . . . \$13.95

This book provides ready-to-use techniques for producing high quality housing for older Americans. It shows how to design housing that meets the physical, social and perceptual needs of senior citizens. Emphasized are the need for shelter, environments and services required by independent elderly as well as those who need health and social services.

**B609 under Books.**

### Anatomy for Interior Designers:

By William Panero, illus., . . . \$9.95

This is a comprehensive book of design standards for designers of interiors. It contains all the data the designer needs for designing around the needs of people in and around buildings: things for people to use; the needs of design, residential and commercial applications, lighting, material selection, horizontal and vertical movement, space, furniture, windows, and

**B610 under Books.**

### Designer's Guide to OSHA

By Peter S. Hopf, A.I.A., illus., . . . \$17.50

This practical volume translates the tens of thousands of words of OSHA regulations into easy-to-use drawings, diagrams, and graphs. With OSHA violations increasing, engineers obviously need a working guide to compliance with government job safety and health regulations. This book fills that need. All regulations are presented in the same sequence as the OSHA regulations are

**B611 under Books.**

## 12 Architectural Delineation A Photographic Approach to Presentation

By Ernest Burden, 288 pp., illus., 1971 . . . \$21.95

In this illustrated book, the author demonstrates a simple, flexible method of using photography to depict architectural projects in true perspective. Also how to create models for photography and how to put together an effective slide presentation.

**Circle B612 under Books.**

## 13 Energy and Form

By Ralph L. Knowles, 198 pp., illus., . . . \$27.50

This is a scholarly, theoretical book, a major work that will be used for years to come. The projects described concentrate on reducing environmental problems in individual or groups of buildings by controlling shape and structure, scale and surface, volume ratio, location and orientation, isolation and insulation.

Publisher will bill you direct before shipping any book.

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## 14 The Architecture of Frank Lloyd Wright: A Complete Catalog

By William Allin Storrer, \$9.95

The first fully complete catalog of every building designed by Wright that was actually constructed — 433 in all — includes a photograph of practically every one of them, and a descriptive note on the materials used, the plan, and the circumstances of construction.

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**Circle B614 under Books.**

## 15 Professional Corporation Desk Book

Published by: The Institute for Business Planning, Inc. 427 pp., illus., . . . \$29.95

You see at a glance which form of practice is best for you — partnership or corporation. The Desk Book compares the opportunities and pitfalls of each. It singles out retirement planning, especially in light of the new Pension

Reform — the biggest single reason why so many professional men have opted for a corporate form of practice.

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## 16 Architecture

By David Jacobs, 191 pp., illus., . . . \$10.00

Stunning modern photographs juxtaposed with plans, cross sections, scale models and historic views form a vivid counterpoint to the authoritative text. A five-page chronology relates events in the history of architecture to other cultural and political developments.

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## 17 Fabrics for Interiors

By Jack Larsen and Jeanne Weeks, 208 pp., illus., . . . \$14.95

Completely geared to current trends, this book can make the difference between costly mistakes and successful, personalized interiors. It explains functions and requirements of fabrics for windows, furniture, walls and ceilings.

**Circle B617 under Books.**

## 18 Architecture and Design, 1890-1939

Edited by Timothy Benton and Charlotte Benton; with Dennis Sharp, 264 pp., illus., . . . \$12.50

This concentrated study of the rise of the Modern Movement in architecture and design covers the half century during which attitudes toward these practical arts were changing dramatically. Based solely on original source material, this book contains extracts from the writings of such influential men as: Adolf Loos, Henry Van De Velde, Hermann Muthesius, Walter Gropius, Le Corbusier, Mies van der Rohe, Bruno Taut, Louis Sullivan, and Frank Lloyd Wright.

**Circle B618 under Books.**

## 19 Rendering With Pen And Ink

By Robert W. Gill, 368 pp., illus., . . . \$6.95

This paper-back edition is a copiously illustrated guide to the techniques and methods of rendering, including sec-

tions on perspective, projection, shadow, reflections, and how to draw cars, ships, aircraft, trees, and human figures. The author also describes the very wide range of instruments and equipment currently in use.

**Circle B619 under Books.**

## 20 Building Construction Illustrated

By Frank Ching, 320 pp., illus., . . . \$17.95

Charmingly hand-lettered by the author, this book presents step-by-step techniques in residential and light construction. Containing over 1,000 drawings, it covers materials, finishes, fastenings, posts, trusses, slabs, wood joists, light steel/aluminum, structural calculations, planning and site work, cost estimating, and construction sequencing.

**Circle B620 under Books.**

## 21 Trees

By Robert L. Zion, 168 pp., illus., . . . \$12.95

An inexpensive paperback version of the book with virtually everything you want to know about using trees to complement the buildings you design. Both aesthetic and practical considerations are given, including tree characteristics, as well as cost considerations, planting, maintenance, rate of growth, and city and seashore recommendations.

**Circle B621 under Books.**

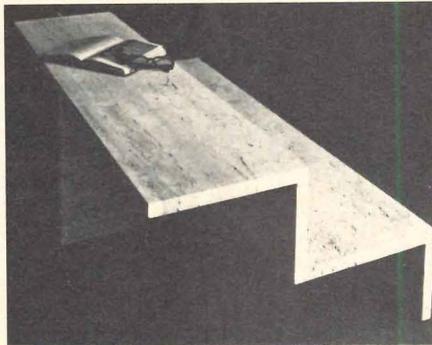
## 22 Restaurant Planning & Design

By Fred Lawson, 180 pp., . . . \$24.95

Develops in detail the elements that go into successful restaurant planning. Not only provides a step-by-step guide in design procedure for the architect and designer, but presents essential technical information in convenient form which will be of value to all catering administrators.

**Circle B622 under Books.**

# Products and literature



Table



Cultured marble bowl



Faucet handle inserts

**Table.** Designed by Architect Mario Bellini, table shown is executed in Travertine marble. It is suitable as an end or coffee table. Atelier International, Ltd.

Circle 101 on reader service card

**Cultured marble self-rimming bowl** in Fleur De Lis shape made from a Gruber mold comes in a variety of colors and is said to be easy to install. Gruber Systems.

Circle 102 on reader service card

**Faucet handle inserts** come in ten marbled and three solid colors to match or contract with vanity tops. Faucets come in bright or brushed chrome or gold finish, in 4-, 8-, or 12-in. centers, with concealed or exposed mountings. Faucet body is solid brass. Bradley Corp.

Circle 103 on reader service card

**Sisal broadloom** for floor and wall covering with a flame spread rating of 25 or less in accordance with ASTM-E84 is available in 48 oz. reversible material for walls or 88 oz. high-density foam backing for floor use. Reversible comes in 4-ft and 12-ft widths and the foam backed materials in 12-ft widths. It is 100 percent static free and has excellent acoustical properties, states maker. Carpet Imports.

Circle 104 on reader service card

**Seam-free epoxy flooring.** Surfacing consists of permanently colored quartz granules and specially formulated 100 percent solids epoxy. Quartz granules are available in small and coarse sizes and 11 colors that make possible many color combinations. Compound bonds to any surface, can be non-slip or have smooth finish, is acid and chemical resistant, easy to maintain, and quick to install, states maker. Dur-a-flex, Inc.

Circle 105 on reader service card

**Cement and masonry stain.** Water-repellent, the product uses inorganic oxide pigments, is nonfading with ultra violet stability. An opaque color toner, the material does not hide or coat the surface, states maker. Treated surface washes clean with natural rain. Canyon Tones come in ten earthtones. United Coatings, Inc.

Circle 106 on reader service card



Sisal broadloom

**Sponge rubber carpet cushion** is made with a new EPDM polymer. Cushion resists heat, cold, moisture, ozone, and sunlight, and can be used both indoors and outdoors. Available in 6-ft and 12-ft lengths. Dayco Carpet Cushion Co.

Circle 107 on reader service card

**Protractor.** A rotating axis permits the user to dial any angle to 360 degrees and draw the line through the vertex without spotting points, using parallel guides, or changing the position of the device for quadrants. It is equipped with two vernier scales to allow readings as precise as 0.1 degree and 5 minutes of arc. Labindustries.

Circle 108 on reader service card

**High intensity drive-in signs** open or close lanes with the touch of a switch, can be seen in sunlight. Compact cases are available in brushed stainless steel or dark bronze finish and install on canopy, wall, or kiosk. Actron, Inc.

Circle 109 on reader service card

**Vanity tops.** Marbled tops are crafted by hot pressure molding silicone and polyester and two-stage heat tempering. Surface is said to be impervious to cosmetics, sprays, medicines, and chemicals normally used in the bathroom and be highly resistant to cigarette burns. Bradley Corp.

Circle 110 on reader service card

[continued on page 92]

# Without a little soft soap,

## Halsey Taylor never would have made it.

Just about 62 years ago, a man named Halsey Taylor called on the U.S. Surgeon General with sketches for an altogether new type of water fountain projector. When the Surgeon General insisted on an actual model, Halsey Taylor bought a bar of soap, sat down on a Washington park bench and carved out the first—and now famous—twin-stream projector.

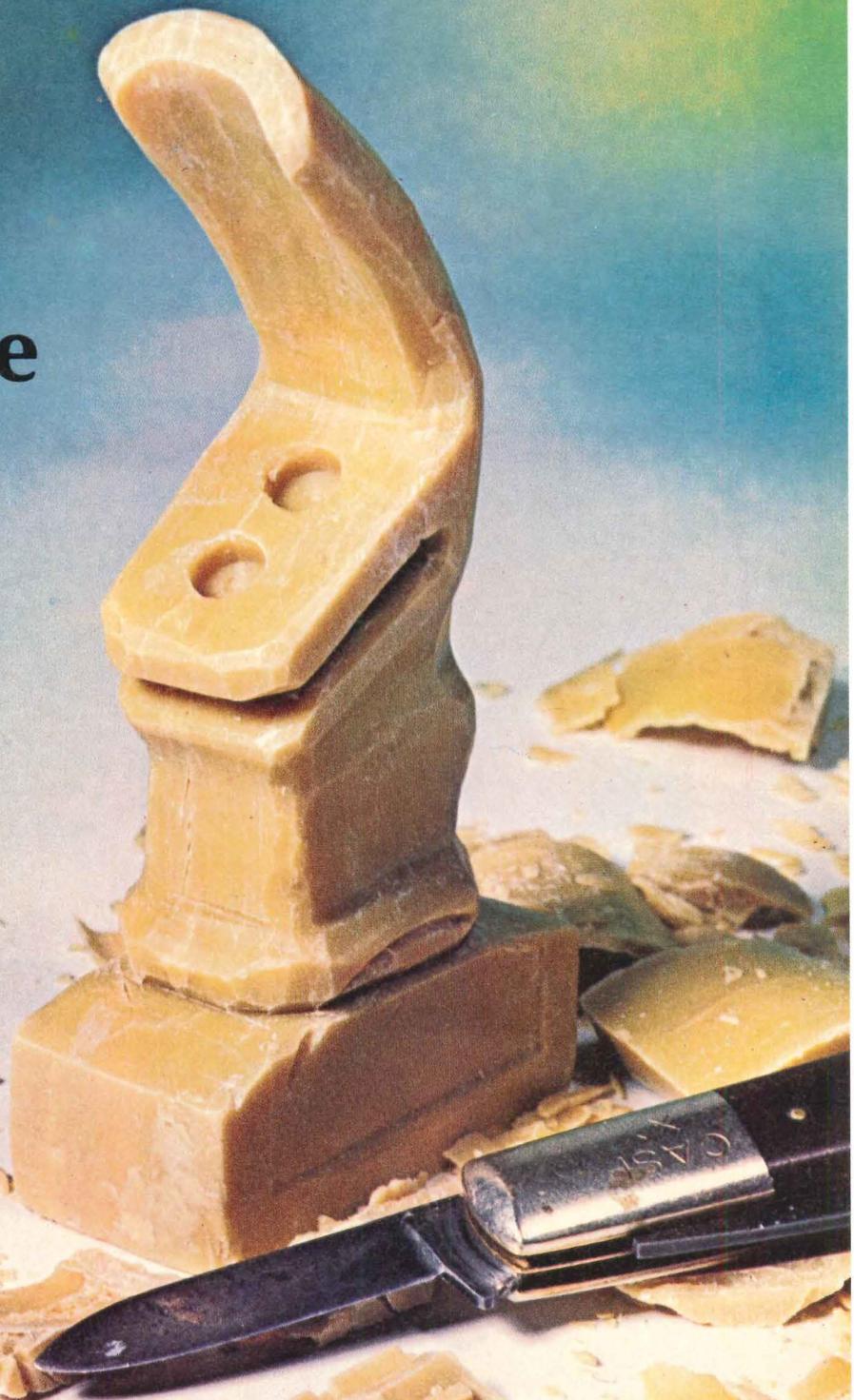
Thus, the Halsey Taylor Company was launched—on a bar of soap.

Today, we manufacture the widest selection of water coolers in the industry. And every one of them is built with high quality, heavy-duty components to deliver years of service with minimum maintenance. For example, we use corrosion-resistant regulator valves, positive start capacitors, long-life fan motors, dual temperature controls that counteract freeze-up, and overload protectors that prevent overheating.

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Halsey Taylor water coolers. Products you can honestly rely on. And that's no soft soap. Write for a copy of our catalog to Halsey Taylor Division, Dept. 176, 1554 Thomas Road, Warren, OH 44481.

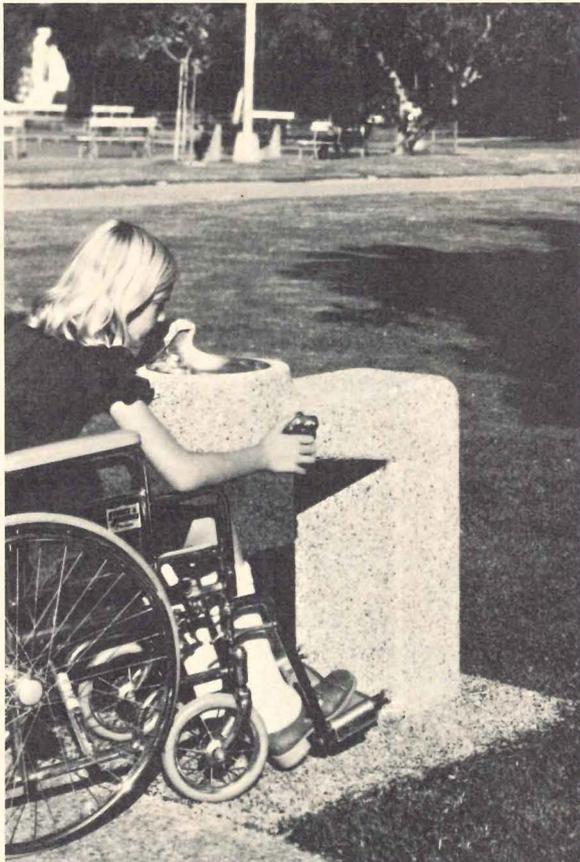
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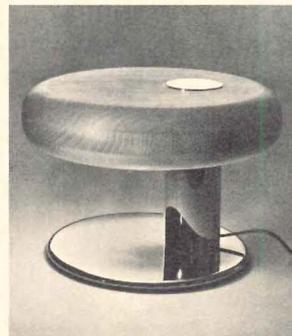
Luminaires



Wheelchair fountain



Stacking chairs



Lamp



China centerset

**Products** continued from page 90

**Luminaires.** Formed in acrylic, they are available in rectangles with oval cameo relief, and cubes with circular or rounded cube cameo relief. Standard colors are smoke gray, white, orange, black, and amber; other colors and cameo designs are available to specifications. Units can be pole, bracket, or pendant mounted indoors or out. Architectural Area Lighting Co. *Circle 111 on reader service card*

**Stacking chairs.** Joined at the front and back legs are two members of oak veneer molded plywood in a multiple band design. Molded plywood seat/back unit may be covered in a wide variety of vinyls and fabrics. Chair stacks six high and is available in both a side and arm chair version. Thonet Industries, Inc. *Circle 112 on reader service card*

**Wheelchair fountain.** Cantilevered unit is of reinforced concrete with an exposed aggregate finish. Stainless steel receptor is recessed flush with fountain's top, and is anchored to the pedestal with bowl holder. The cast concrete structure extends over the bubbler. Dual, lever-type valve handles are located at either side of the receptor. An alternate exterior surface featuring a light sandblasted finish is also available. Haws Drinking Faucet Co. *Circle 113 on reader service card*

**Lamp** designed in ashwood or mahogany and polished chrome measures 10 in. high, 14 in. diameter and takes one 60 watt bulb. Lighting Associates, Inc. *Circle 114 on reader service card*

**China centerset** is white with gold accents. Exposed metal parts are finished in bright or brushed gold. Tub and shower fittings are also offered and include a centerset with three-valve tub filler, manual diverter, deluxe showerhead, china over-rim spout. Bradley Corp. *Circle 115 on reader service card*

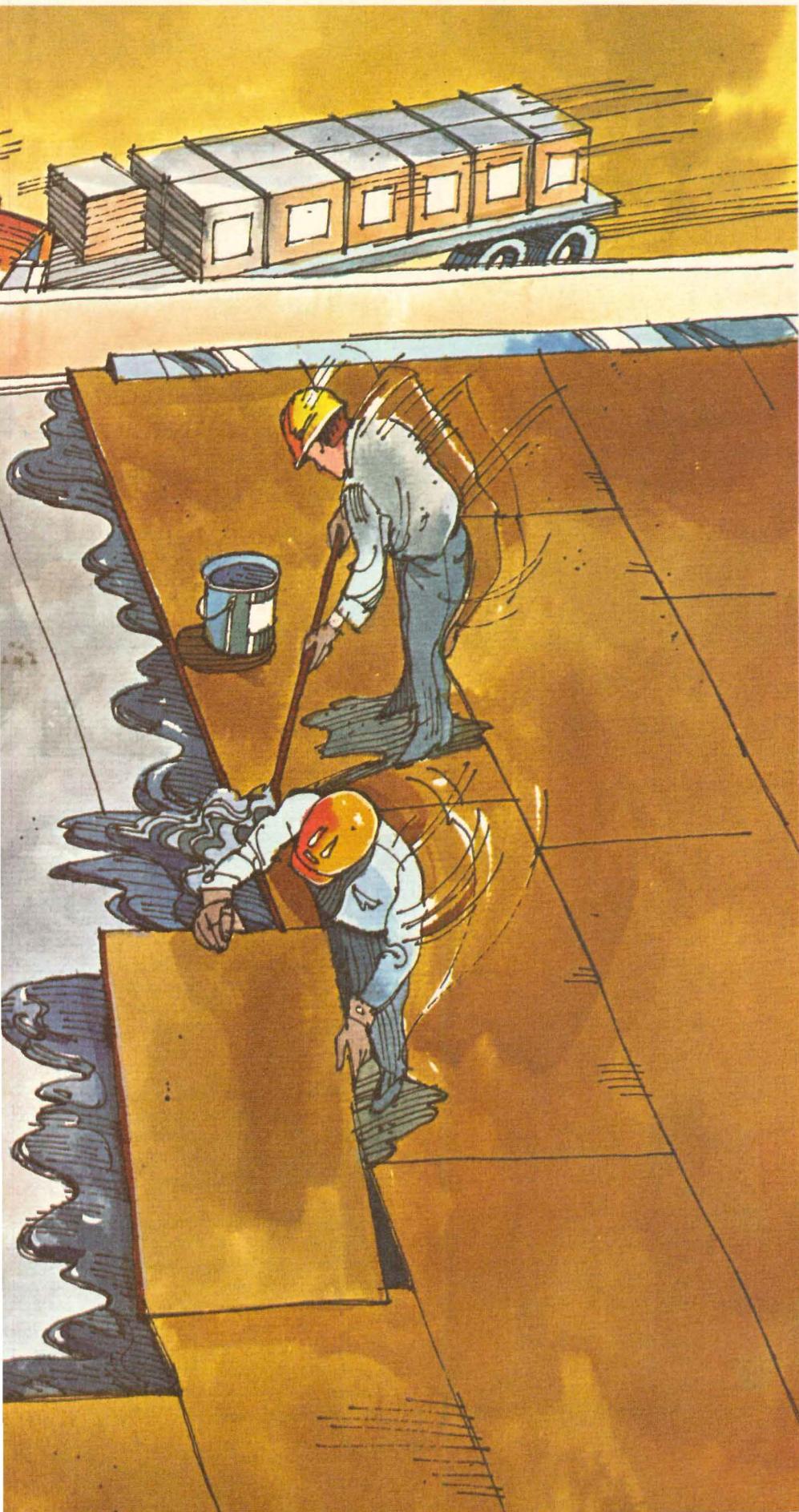
**Dimmers.** A solid state unit which attaches to any portable lamp cord features sliding light control, no wire stripping, full range continuous dimming, and is available in eggshell white or charcoal brown. A portable, tabletop lamp dimmer plugs into any table, swag, or pole lamp, and has similar features. Lutron Electronics Co. *Circle 116 on reader service card*

**Silicone foam fire stop** was developed especially for wall and floor penetrations in nuclear and fossil electric power plants, petro chemical, industrial and commercial buildings. Product is based on silicone elastomer foams which is applied by specially designed dispensing equipment. Dow Corning Corporation. *Circle 117 on reader service card*

**Side chair** of white shells are contoured of one-piece thermoplastic. Optional cushions can be upholstered in choice of fabric and color. Chairs nest or stack for storage, and are suitable for indoor or outdoor usage. Krueger. *Circle 118 on reader service card*

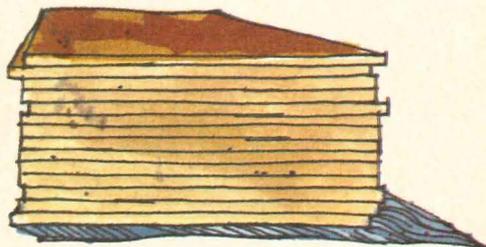
[continued on page 94]

# A roof insulation builds savings into built-up roofing systems.

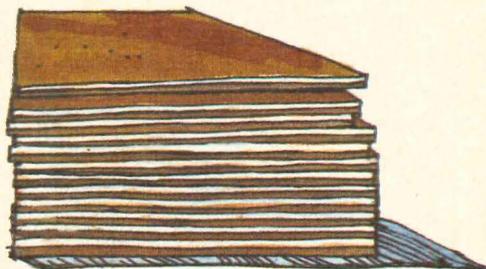


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**Washroom vanity centers.** Cabinets are constructed of 3/4-in.-thick, 3-ply resin-impregnated particle board. Doors are fitted with heavy duty hinges and have keyed tumbler locks. Exterior finishes are available in a wide range of laminated plastic wood grains and colors, all interior surfaces have a painted finish. Models include single lavatory units 34 in., 48 in., 54 in., and 60 in. wide. Each unit is equipped with a single towel dispenser and waste receptacle. Widest unit is also available for two lavatories, and is equipped with two towel dispensers, one at each end and a waste receptacle positioned in the middle. Bobrick Washroom Equipment, Inc.  
*Circle 119 on reader service card*

**Ceramic ceiling panels.** Composed of inorganic mineral fibers in a ceramic bond, panels are 24"x24" or 24"x48" and come with or without acoustical treatment. Both types carry Class 1 Fire Hazard Rating of 0-0-0 as tested in accordance with ASTM-E84. Panels are especially designed for high heat, moisture, and humidity installations. Conwed Corporation.  
*Circle 120 on reader service card*

**Rebar spacer.** Made of high density polyethylene, "Donut" spacers have small projections that provide minimum exposed surface—the vertical spokes allow free flow of concrete around the unit. Will accommodate all rebars up to and including # 14s, and provide a 2-in. clearance from form surface. Steel & Wire Corp.  
*Circle 121 on reader service card*

**Graphic planning system.** For designers, architects, and space planners, it offers specialized systems for office interiors, residential interiors, and modular industrial shelving. Each kit contains hundreds of different plan shapes with multiples of the most commonly used items. Flex-plan uses a plastic film material that is precision printed and diecut into reusable 1/4" scale plan shapes that cling to any size gloss format sheet. Drawmatix Inc.  
*Circle 122 on reader service card*

## Literature

**Marble fabrication.** A process called "shop bonding" includes the design, layout, cutting to size, finishing, and assembly, by use of high-strength bonding cements, of marble veneer pieces into larger, more complex final assemblies which can then be shipped intact to the building site. A color brochure is available from Vermont Marble Company.  
*Circle 201 on reader service card*

**Marble** in various color variations of gray and beige is available from this company, which also produces a line of package products for shower and dressing room combinations in marble. Literature is available. Carthage Marble Corp.  
*Circle 202 on reader service card*

**Slate.** A uniform size of 1/4"x7"x14" is used in butt joint setting. This method required no grouting and no clean up with an acid wash or sawdust wipe. Literature describes the nature of slate, specifications, and savings derived from the design concept of butt joint slate. Vermont Structural Slate Company, Inc.  
*Circle 203 on reader service card*

**Appliances.** 1976 catalog details company's offering of kitchen and laundry appliances, built-in air conditioners, and customer services available to builders. Illustrated brochure provides product specifications and dimensional drawings. Request No. 24-8466. General Electric.  
*Circle 204 on reader service card*

**Architectural sheet metal.** Microzinc 70 is a non-rusting, zinc-copper-titanium alloy that is preweathered and, because its surface is zinc carbonate, it cannot fade. Suitable for fascias and gravel stops as well as gutter lining material. Brochure gives suggested specifications, comparative properties. Ball Metal & Chemical.  
*Circle 205 on reader service card*

**Resilient tile color comparison charts** include all colors currently being manufactured in 3/32" and 1/8" gauges for commercial and institutional use. Resilient Tile Institute.  
*Circle 206 on reader service card*

**Computer graphics.** Brochure covers the self-contained turn-key system for handling all types of drawings from electric schematics to detailed mechanical layouts. Any drafting idea, including an undimensioned or unproportioned sketch can be converted to finished drawing requirement. Modular in design, system can be adapted to current or future needs. Auto-trol Corp.  
*Circle 207 on reader service card*  
 [continued on page 97]

*for safer, more comfortable,  
more enjoyable living*



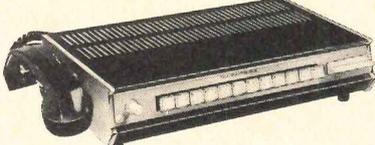
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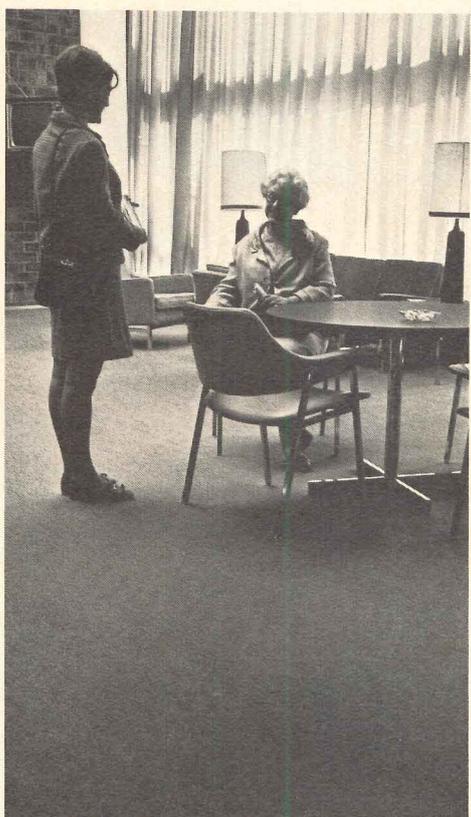
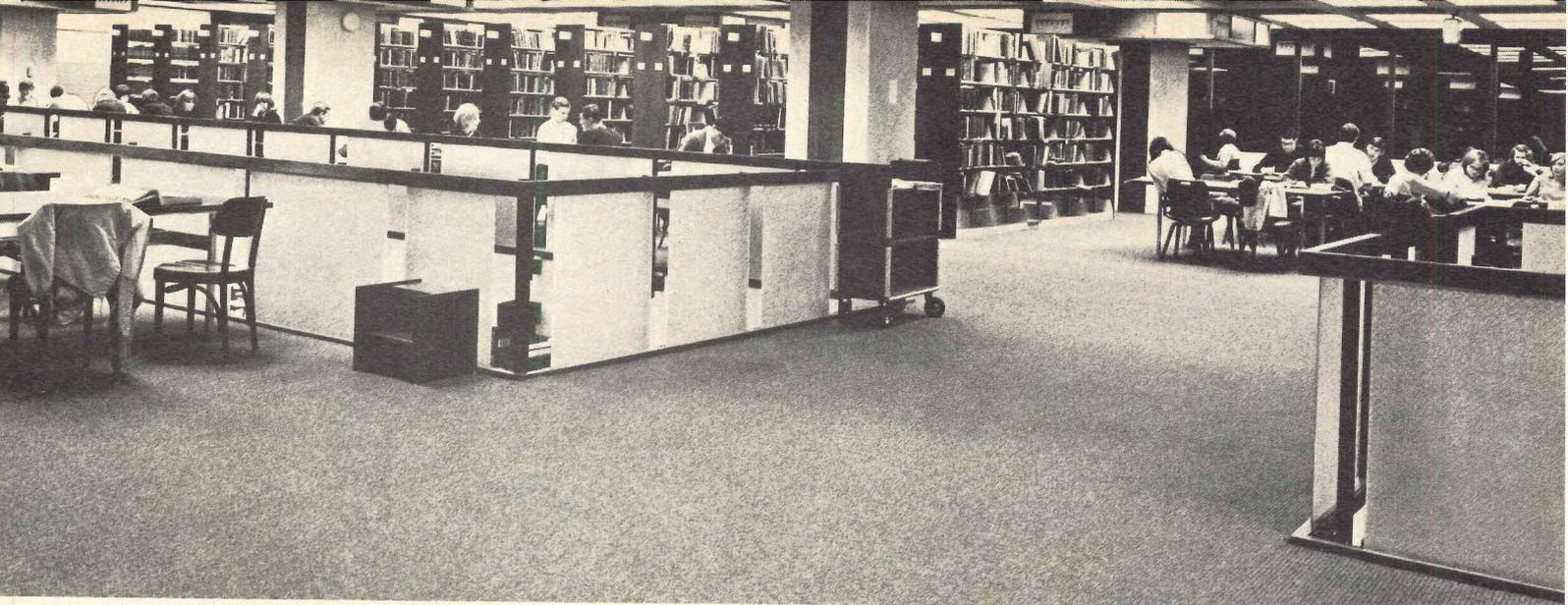


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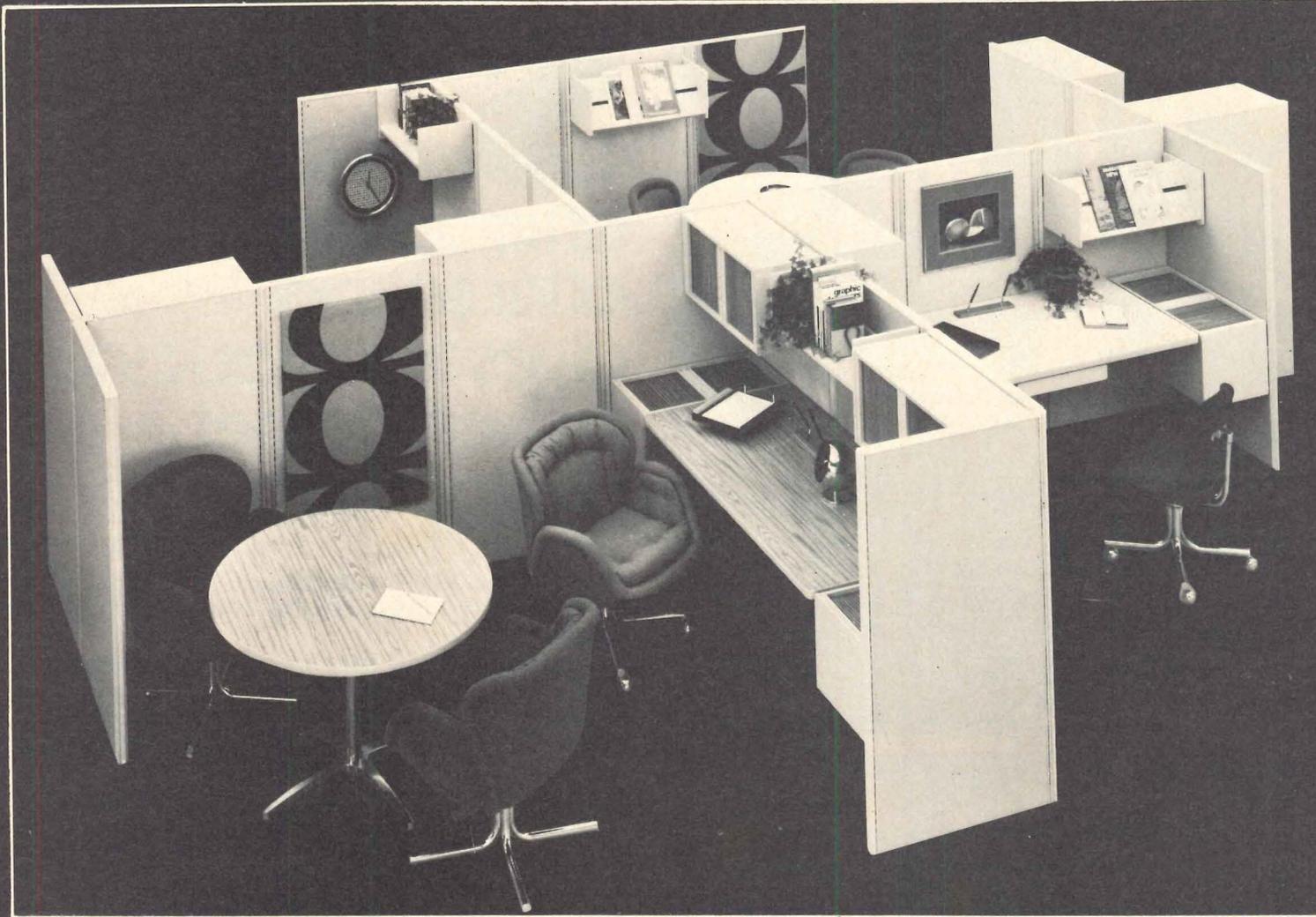
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Literature continued from page 94

**Modular display and exhibition components** offer an alternative to custom built exhibits and display for trade shows, conventions, lobbies, shopping malls. Frames are of 3/8 in. chrome steel, panels are 3/16 in. pinboard covered on both sides with choice of color in fire-retardant burlap (acrylic panels are also available; white standard, other colors on special order). Shelves are in cabinet-grade plywood covered with vinyl in choice of colors. Literature is available. Expo Communications, Inc.

Circle 208 on reader service card

**Electric water heaters.** Immersion and surface mounted thermostat models and compact instantaneous models designed for undercounter installations are described and illustrated in brochures which also give engineering information, dimensional drawings, and sample specifications. Rheem Manufacturing Company.

Circle 209 on reader service card

**Lockers.** Catalog describes full line of steel lockers and details such items as single-, double-, and multiple-tier lockers, group units, dual and duplex lockers, and specials. Describes optional equipment locks, basket racks, and latching system said to deter vandalism and reduce locker noise. Includes information on colors, styles, dimensions, specification, and installation drawings. Penco Products, Inc.

Circle 210 on reader service card

**"Painting Systems for Specifiers and Applicators,"** is a 60-page catalog that includes: directions for writing coatings specifications; selection charts; product descriptions; recommended uses; performance information; surface preparation and priming; application information; drying times; coatings analysis; film characteristics. It also includes surface burning characteristic data on flame spread, fuel contributed, and smoke developed as determined by standard testing methods. The Sherwin-Williams Co.

Circle 211 on reader service card

**Furniture groupings.** Four-color brochure features eight different groupings in both traditional and contemporary designs. All come in imported and domestic hardwoods with hand-rubbed finishes. R-Way Furniture Company.

Circle 212 on reader service card

**Aluminum grating** which features a positive locking of cross bars and bearing bars with cold-forged, swaged construction is illustrated and described in 8-page brochure. Because aluminum is non-sparking, it can be used extensively in explosive atmospheres and its corrosion resistance gives it use in water treatment, sewage, chemical, and other processing plants. Brochure covers grating safelod tables; stair treads using the swage-lock construction; sidewalk grating; and grating for decorative and protective application. Tolerances and specifications are also included. Keene Corporation.

Circle 213 on reader service card

**Masonry blocks.** Eight-page brochure provides information and specifications on load-bearing sound absorbing units which permit sound control to be built into the structure of a building. Includes performance data and in-use application illustrations. The Proudfoot Company, Inc.

Circle 214 on reader service card

**Office landscape partitions.** Custom-tailored lightweight screens are available in a variety of modular designs and sizes. The straight or curved panels with walnut, oak, or aluminum frames are offered in 23 colors and 3 textures: fabric, carpet, and vinyl. Maker states panels are flame resistant, and have a noise reduction coefficient of up to .95 NCR. Custom finishes and fabrics are also available. Full-color brochure. Panel Concepts.

Circle 215 on reader service card

**Roof deck panels** consist of four individual runs of 2x6 tongue-and-groove decking, finger-jointed for structural strength and panelized by the application of a heavy Kraft paper. Each panel face is a net of 19 1/2 in. wide and is available in standard lengths to 24 ft with special orders to 36 ft available. Comes in four appearance grades—Premium, Architectural, California Rustic, and Industrial. Reference catalog also contains complete descriptive information on Shear Clip System, a custom diagram design method for nominal two-in. decking. American Forest Products Corporation.

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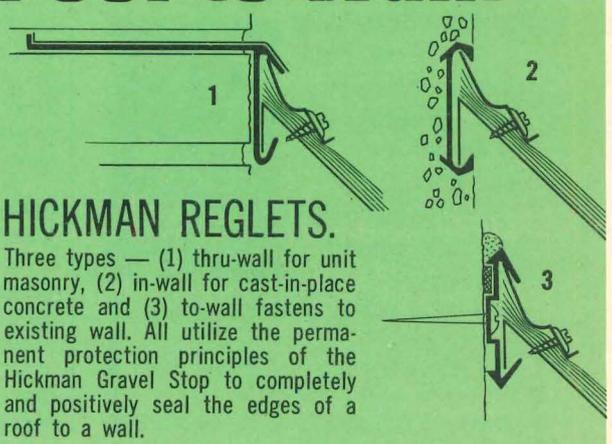


Open, the VIC II reveals a black or green chalkboard, or optional white marker board; cork panels for display; a storage or display tray. Available for use within seconds are a recessed map; pull-down projection screen; and writing/charting sheets. Securely and simply hung on the wall, VIC II is easily removed for cleaning or relocating.

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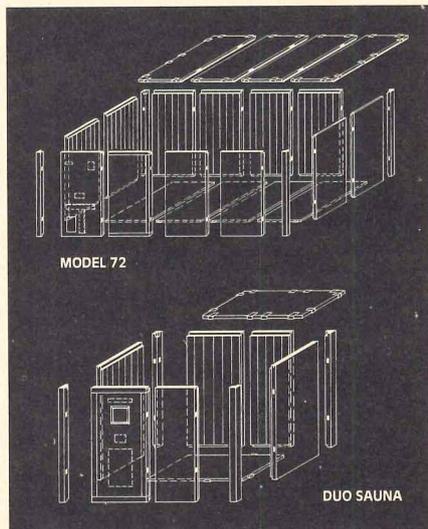
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## Building materials

Major materials suppliers for buildings that are featured this month, as they were furnished to P/A by the architects.

### Penn's Landing Square, Philadelphia, Pa.

(p. 48). Architects: *Louis Sauer Associates, Philadelphia, Pa.* Concrete spread footings: Warner Concrete. Precast concrete: Stresscon Industries. Brick: Glen Gery. Drywall: Gold Bond. Shingles: Philip Carey. Caulking: Recora. Insulation: Owens-Corning. Windows: WT Industries. Doors: Arch Opening & Steel Buck Corp. Rolling steel doors: Dalton International. Locksets: Schlage. Paint: Buten. Kitchen cabinets: Aristocraft Kitchens. Swimming pool: Viking. Washers/dryers: Westinghouse. Ranges: Caloric. Refrigerators: Whirlpool. Fireplaces: Thulman Eastern. Stairs: United Stairs. Lighting: Prescolite, Sterling Progress. Bathroom fixtures: Briggs. Heating: Westinghouse.

### West Village Houses, New York, N.Y. (p. 54).

Architects: *The Perkins & Will Partnership, White Plains, New York.* Brick bearing wall: Merritt Brick Co., Gypsum wallboard: U.S. Gypsum. Built up roofing: Barrett. Dampproofing: Koppers. Aluminum double-hung windows: Alwinseal. Metal doors: Williamsburg Steel. Glass: LOF. Locksets: Lockwood. Equipment (kitchen): General Electric. Intercom: ERL. Rubs and lavatories: Koehler. Flush valves: Sloan. Electric heating: Markel. Kitchen cabinets: Mallis Woodworking. Vinyl asbestos tile: GAF. Ceramic tile: Romany Spartan.

### 1199 Plaza Cooperative Housing, New York, N.Y. (p. 64). Architects: The Hodne/Stageberg Partners, Minneapolis, Minn.

Reinforced concrete: Portland Cement, Cilco, and Hudson. Face brick: Merritt Brick Co. and Boren Clay Products. Resilient floor tile: GAF. Interior wall surfaces: U.S. Gypsum. Aluminum sliding windows: Alwinseal Inc. Hardware: Lockwood. Paint (exterior oil, interior gloss enamel and alkyd flat): Amsterdam. Kitchen ranges: Magic Chef. Refrigerator: Hotpoint. Elevator: Otis Elevator.

### Rutland Road Houses, Brooklyn, N.Y. (p. 70).

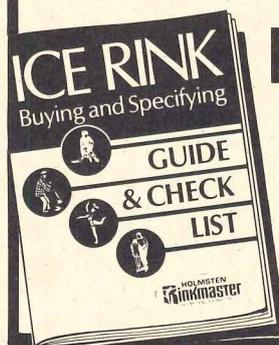
Architect: *Stull Associates, Inc., Boston, Mass.* Reinforced concrete spread footings: Hudson Cement, Colonial Sand & Stone, Coleman, Jackson & Muratore, Rissi Concrete Co. Concrete bearing walls: C. W. Blakeslee. Prestressed floor and roof planks: C.W. Blakeslee, Lone Star Cement, Bethlehem Steel. Carpet: Mohawk Carpet. Vinyl asbestos tile: GAF. Spray acoustic ceiling: U.S. Gypsum. Roof surfacing: Koppers. Fiberglass panels: Kalwall Corp. Insulation: Apache Foam Products. Wall board partitions: National Gypsum. Windows: General Bronze. Aluminum storefront: Kawneer. Storefront glazing: General Electric Lexan. Temp. plate glass: Combustion Engineering. Locksets: Almet. Paint: Benjamin Moore, Plextone. Elevators: Otis Elevator. Heating: Markel.

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- Operating cost comparisons.
- Best way to plan an ice rink.
- Time-saving and cost-saving steps.
- Latest ice rink developments.
- Ice temperature control.
- Ice hardness requirements.
- Double rink cost and operation.
- Subsoil heating and when needed.
- Dehumidification and when required.

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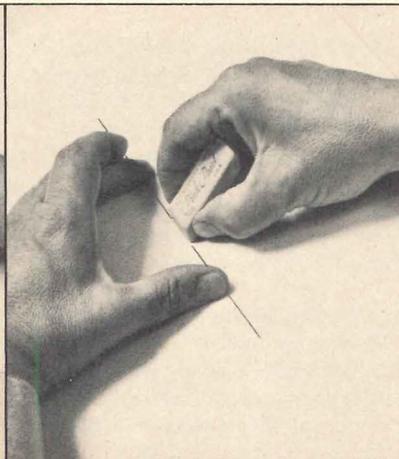
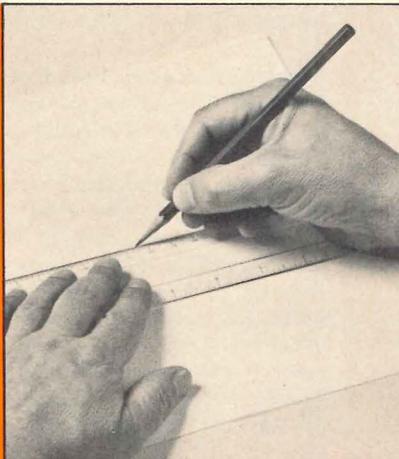
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# Job mart

## Situations open

**Architectural Historian:** The School of Architecture at Montana State University is seeking applications to fill a vacancy at the level of Assistant Professor with appointment beginning 1 September 1976. Applicants should have capability of teaching Architectural History and Theory from ancient through modern, including current and future concepts. Capability of teaching architectural design desirable. Terminal degree or Ph.D. in Architectural History required. Montana State University is an equal opportunity employer. Interested parties please send resumes to Ilmar Reinvald, Director, School of Architecture, Montana State University, Bozeman, Montana 59715.

**Director, Historic Preservation Program:** Seek highly capable person with vision and excellent experience in policy direction, administration, teaching, supervision of research and general academic responsibilities. May hold degree in architecture, architectural history, urban planning, law, or related discipline. Salary negotiable. Send resume, including references, to Professor Adolf K. Placzek, Chairman, Search Committee, Graduate School of Architecture and Planning, Columbia University, New York, New York 10027. Application due April 1, 1976. Columbia University is an Affirmative Action employer.

**Energy/Resource Usage Coordinator:** Develop and implement programs to reduce consumption of energy and resources by the Jefferson County R-1 Schools. Qualifications: BS/BA or equivalent in engineering, architecture, physical sciences or business; 8 to 10 years relevant employment, five years of which should be at the management level, and include development and implementation of technical and/or managerial systems and programs. Salary: \$20 to \$27K. Send Resumes to: Director of Classified Personnel; Jefferson County Schools, 1215 Quail, Lakewood, Colorado 80215. An Equal Opportunity Employer.

**Faculty Position:** Applications are sought for a faculty position at a junior level on a nine month basis for the academic year

1976-77. The position will primarily require teaching architectural design studios plus a regular course or seminar in a related field. A professional degree (M. Arch.) is required. Architectural office experience and professional registration are highly desirable. Degree(s) in related fields is also desirable. Previous teaching experience is not necessary. Applications should include a curriculum vitae, recommendation letters, and a statement of intentions and should be addressed Washington University, St. Louis, Missouri 63130 c/o Dean C. Michaelides by Friday, February 20, 1976. A portfolio with samples of work and any other pertinent material should be available if called for. The School of Architecture offers an undergraduate program leading to the Bachelor of Arts degree (major in architecture) and graduate programs leading to the Master of Architecture (first professional degree) and Master of Architecture and Urban Design. The faculty numbers 19 full time, 19 part time and 4 visitors. Enrollment in September, 1975 was 333 students (187 undergraduates, 146 graduates). Washington University is an equal opportunity employer.

**Faculty Position:** The School of Architecture of the University of Maryland is accepting applications from qualified persons for a faculty position in architectural lighting and acoustics. Advanced degree required, teaching and professional experience highly desirable. Rank and salary commensurate with qualifications. Please send resume to Mr. Ronald E. Shaeffer, Chairperson, Faculty Search Committee, School of Architecture, University of Maryland, College Park, Maryland 20742. Resumes will be received until May 31. The University of Maryland is an equal opportunity employer.

**Head:** Department of Industrial Design, The University of Cincinnati, College of Design, Architecture, and Art, is seeking a head for the Department of Industrial Design. Appointment to begin Fall 1976. Responsibilities include administration of educational program, curriculum development and teaching. Send resume with references to: Rollett Bloom, Chairman, Industrial Design Search Committee, College of Design, Architecture and Art, University of Cincinnati, Cincinnati, Ohio 45221. An equal opportunity/affirmative action employer.

**Mechanical Engineering:** Develop mechanical engineering capability in well-established, design-oriented architectural firm. Potential to offer independent consulting services. Registration required. Salary commensurate with ability and experience. Excellent family living environment in attractive, small southeastern community. Reply Box #1361-920. *Progressive Architecture*.

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**Project Architect:** Registered, Design Oriented, Design Oriented, Design Oriented with minimum 3 years experience. Career opportunity with growth potential for individual committed to quality performance through team approach. Previous project administration experience desirable. Kenco Associates, Inc. is a growing 50-person interdisciplinary A/E firm, situated adjacent to two beautiful golf courses in the suburbs of an Eastern Kentucky city and only minutes away from Interstate 64. The firm has a liberal benefits program including paid Insurance, Holidays, Vacations, and Sick Leave. Submit resume and salary history to Kenco Associates, Inc., Route 2 Box 798, Ashland, Kentucky 41101. An Equal Opportunity Employer.

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**Syracuse University:** School of Architecture will have one full time permanent position and one part time temporary position open for fall of 1976. The positions are in the undergraduate Architectural Design Studio. Applicants for the permanent position should have a strong secondary Architectural capability. Registration in one or more states is preferred. Rank: Assistant or Associate professor depending on qualifications and experience. Please send resumes and references to Professor Paul Malo, Chairman, Appointments Committee, School of Architecture, Syracuse University, Syracuse, New York 13210. Syracuse University is an Equal Opportunity/Affirmative Action Employer.

[continued on page 102]

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**Texas A&M University:** The Department of Architecture at Texas A&M University is seeking a full-time faculty member to direct and develop an on-going Interior Space Design option in the professional Master of Architecture program. The successful applicant must hold a degree in architecture, a graduate degree in architecture or a related field, and have professional experience. The position will be available in September 1976. Salary and academic rank open. Texas A&M University is an Affirmative Action/Equal Opportunity Employer. Send resume and references before 19 April 1976 to: David G. Woodcock, Head of Department of Architecture, College of Architecture and Environmental Design, Texas A&M University, College Station, Texas 77843.

**University of California, Berkeley:** Invites immediate application for position of Dean, College of Environmental Design. The College comprises departments of Architecture, City and Regional Planning, and Landscape Architecture. It offers the Ph.D. degree through each of these three departments; professional masters degrees in those fields, the M.A. degree in Design; and B.A. degrees in architecture and landscape architecture. The Center for Planning and Development Research is an organized research unit associated with the College and responsible to the Dean. Applicants should submit by March 30, 1976, full resumes of educational, professional, and administrative experience together with a list of three references, to: Search Committee—Environmental Design, Office of the Provost, Professional Schools and Colleges, 200 California Hall, University of California, Berkeley, 94720. The University is an Equal Opportunity/Affirmative Action Employer. Minority and women candidates are encouraged to apply.

**University of Wisconsin-Milwaukee:** The Department of Architecture in the School of Architecture and Urban Planning seeks a person with a background in the area of building sciences and technology, to help the Department further develop its undergraduate and graduate programs in this area. Candidates should have at least a Masters Degree and some professional and/or research experience. The candidates should be prepared to teach as a lecturer and as a member of a team utilizing studio, classroom and field experience techniques. Candidates should also have specialized experience in one or more of the following areas: building rehabilitation/conservation, housing, computer technology, HVC, energy

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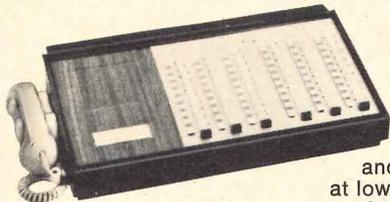
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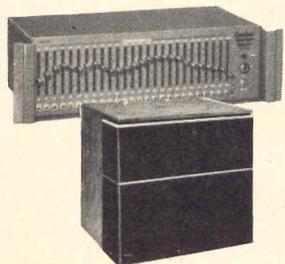
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Azrock Floor Products .....	Cover 2
<i>Glenn, Bozell &amp; Jacobs</i>	
Bally Case & Cooler, Inc. ....	75
<i>Beaumont, Heller &amp; Sperling, Inc.</i>	
Bayley, William Co. ....	8
<i>Odiorne Industrial Advertising</i>	
Bigelow-Sanford, Inc. ....	95
<i>D'Arcy-MacManus &amp; Masius</i>	
Bradley Corp. ....	12, 13
<i>Hoffman, York, Baker &amp; Johnson, Inc.</i>	
BRK Electronics, Div. Pittway Corp. ....	76
Cabot, Samuel, Inc. ....	31
<i>Donald W. Gardner Advertising, Inc.</i>	
Carpenter, L.E. & Co. ....	6
<i>Harold Marshall Advertising Co. Inc.</i>	
Celanese Coatings Co. ....	37
<i>Doe-Anderson Advertising Agency, Inc.</i>	
Celotex Corp. ....	1
<i>Mike Sloan, Inc.</i>	
Clearprint Paper Co. ....	99
<i>Hoefler, Dieterich &amp; Brown, Inc.</i>	
Cold Spring Granite Co. ....	7
<i>Kerker &amp; Associates</i>	
Dover Corp., Elevator Division .....	17
<i>Caldwell/Bartlett/Wood</i>	
Dow Badische Co. ....	2
<i>Vitt Media International, Inc.</i>	
Emhart Corp./Russwin Div. ....	Cover 3
<i>Horton, Church &amp; Goff, Inc.</i>	
Fedders, Inc. ....	36
<i>Kenyon &amp; Eckhardt, Inc.</i>	
Georgia Marble Co. ....	79
<i>Cargill, Wilson &amp; Acree, Inc.</i>	
Grace, W.R., & Co. ....	101
<i>Charles Palm &amp; Co., Inc.</i>	
Grefco, Inc., Bldg. Prod. Div. ....	9
<i>Boylhart, Lovett &amp; Dean</i>	

Halsey Taylor .....	91
<i>Dudreck, DePaul &amp; Morgan, Inc.</i>	
Haws Corporation .....	96
<i>Juhl Advertising Agency</i>	
Helios Tension Products, Inc. ....	77
<i>Hisata Design Associates, Inc.</i>	
Hickman, W.P. Co. ....	97
<i>John H. Rosen Advertising, Inc.</i>	
Holmsten Ice Rinks, Inc. ....	98
<i>Putman &amp; Wangen, Inc.</i>	
INRYCO, Inc. ....	74
<i>Melrose Advertising Associates</i>	
Johns-Manville, Building Systems Div. ...	93
<i>Broyles, Allebaugh &amp; Davis, Inc.</i>	
Johns-Manville, Holophane Division ...	33
<i>Broyles, Allebaugh &amp; Davis, Inc.</i>	
Lundia, Myers Industries, Inc. ....	16
<i>Ross Lllewellyn, Inc.</i>	
Herman Miller, Inc. ....	25-27
<i>McDonald &amp; Little</i>	
Monsanto Co. ....	20
<i>Advertising &amp; Promotion Services</i>	
Olympic Stain, Div. of Comerco, Inc. .Cover 4	
<i>Kraft &amp; Smith</i>	
Omni, Div. Hoover Ball & Bearing Co. ...	97
<i>Omni Advertising Group</i>	
Potlatch/Townsend Div. ....	32
<i>Ayer Jorgensen MacDonald</i>	
PPG Industries, Inc. ....	18, 19
<i>Ketchum, MacLeod &amp; Grove, Inc.</i>	
Progressive Architecture Bookstore ..	88, 89
Rauland-Borg Corp. ....	103
<i>George Brodsky Adv.</i>	
Rolscreen Co. ....	4, 5
<i>Kerker &amp; Associates</i>	
RPM, Inc. ....	28
<i>Westgate Advertising Co.</i>	
Russwin Div./Emhart Corp. ....	Cover 3
<i>Horton, Church &amp; Goff, Inc.</i>	
San Valle Tile Kilns .....	16
<i>Weinberg Advertising Co.</i>	
Soss Mfg. Co. ....	32
<i>Brewer Associates, Inc.</i>	

Speed Queen, Div. McGraw-Edison Co. <i>Harpham Co.</i>	
Talk-A-Phone Co. ....	
<i>Quinn Prichard Advertising</i>	
Unistrut—GTE Sylvania .....	
<i>Doyle, Dane, Bernbach, Inc.</i>	
United Airlines .....	
<i>Leo Burnett, U.S.A.</i>	
Uvalde Rock Asphalt Co. ....	
<i>Glenn, Bozell &amp; Jacobs</i>	
Viking Sauna Co. ....	
<i>Meltzer, Aron &amp; Lemen, Inc.</i>	
Vinyl Plastics, Inc. ....	
<i>Andrews Advertising, Inc.</i>	
Wilson, Ralph Plastics Co. ....	
<i>Jack T. Holmes &amp; Associates, Inc.</i>	

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